AdvanceVT Annual Report
Year 3: September 2005 – August 2006
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Contents

Program Overview

The overall goal of *AdvanceVT* is to contribute to the development of a national science and engineering academic workforce that includes the full participation of women at all levels of faculty and academic leadership, particularly at the senior academic ranks, through the transformation of institutional practices, policies, climate and culture at Virginia Tech. The program has four major elements: advancing women into faculty careers, increasing the representation of women faculty in science and engineering, empowering women as leaders and scholars, and institutionalizing change through policy review.

Significant accomplishments during year three include increased visibility for gender issues campus wide through widely disseminated publications, a special university-wide conference on work life issues for academic leaders co-hosted with the President's Office, engagement with Faculty Senate and the Commission on Faculty Affairs, and an annual *AdvanceVT* workshop hosted jointly with the Office of Multi-Cultural Affairs; intensive work with department heads including discussions at college level department head meetings on university policies and a two-day orientation program for new department heads; education of search committees on unconscious bias; dissemination of findings of the campus-wide faculty survey, focus groups, and exit survey; and completion of the first cohort of women faculty participating in the intensive leadership development program.

Indicators of institutional change:

- The number and percentage of women tenure track faculty in the College of Engineering has increased from 21 (7.3%) in fall 2001 to 39 (13%) in fall 2005. According to the American Society for Engineering Education, Virginia Tech now has the third highest number of female engineering faculty in the U.S.
- The tenure clock extension policy was substantially revised and approved by the Board of Visitors, June 2006.
- A new policy on modified duties was developed and approved by the Board of Visitors, June 2006.
- The Dual Career Assistance Office was opened in October 2005 and assistance provided to nearly 59 dual career couples during 2005-06.
- Advance Professor and Co-PI Karen Thole was appointed William S. Cross Professor of Mechanical Engineering in summer 2005, and will be leaving Virginia Tech in July 2006 to accept the position of head of the mechanical engineering department at Penn State.
- Advance Professor Beate Schmittmann has accepted the position of head of the physics department at Virginia Tech, effective August 2006, and will be the first female department head in the colleges of science and engineering.

Participants

Project Management System and Infrastructure

During year three of the program, *AdvanceVT* continued to operate under the leadership structure developed at the beginning of year two, with the modification that all members of the Leadership Team served also on the Executive Committee. Provost and Vice-President for Academic Affairs Mark McNamee continued as Principal Investigator (PI) for the Advance program at Virginia Tech, with Associate Provost Patricia Hyer, Professor Karen Thole, and Professor Nancy Love as Co-PIs. Professor Beate Schmittmann and Associate Professor Roseanne Foti as well as professors Thole and Love served as Advance Professors and members of the leadership team. Elizabeth Creamer, professor of Educational Leadership and Policy Studies, continued in her role as Assessment Director. Associate Dean Nancy Ross served on the leadership team during spring 2006 while Professor Schmittmann was on sabbatical. Associate Professor Tonya Smith-Jackson also joined the leadership team in spring 2006 as program chair for the Transforming the Professoriate Conference. Project Director Peggy Layne continued in that role. Administrative Assistant Barbara Johnson retired in March and was replaced by Robyn Midkiff. Graduate assistants Ane Johnson and Valerie Glass also supported the program.

Overall responsibility for allocation of project funds resides with the Principal Investigator, Provost Mark McNamee, with day-to-day oversight delegated to Project Director Peggy Layne. All financial matters are conducted with the oversight of the university's Office of Sponsored Programs, in accordance with all appropriate policies and procedures. Administrative Assistant Robyn Midkiff processes financial paperwork and maintains all program files. Provost office bookkeeper Alva Phillips prepares monthly financial reports for review by Project Director Layne.

Executive Committee

During year three, the Executive Committee met monthly to provide programmatic oversight and high level support for the program, with increased attention to institutionalization and sustainability of *AdvanceVT* initiatives. The following individuals served on the Executive Committee:

- Mark McNamee, PI, Provost and Vice President for Academic Affairs
- Dick Benson, Dean, College of Engineering
- Lay Nam Chang, Dean, College of Science
- Karen DePauw, Vice Provost for Graduate Studies and Dean of the Graduate School
- Patricia Hyer, Co-PI, Associate Provost for Academic Administration
- Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering
- Nancy Love, Co-PI and Advance Professor, Professor of Civil and Environmental Engineering
- Roseanne Foti, Advance Professor, Associate Professor of Psychology

- Beate Schmittmann, Advance Professor, Professor of Physics (on sabbatical spring 2006)
- Nancy Ross, Associate Dean for Research, Graduate Studies, and Outreach, College of Science (spring 2006)
- Elizabeth Creamer, Assessment Director, Professor of Educational Leadership and Policy Studies
- Peggy Layne, Project Director

Leadership Team

During year three, the leadership team met monthly to review progress and plan activities. Program priorities for the year focused on increasing visibility both on campus and in the broader community, and moving towards institutionalization of *AdvanceVT* programs. The following individuals served on the Leadership Team:

- Mark McNamee, PI, Provost and Vice President for Academic Affairs
- Patricia Hyer, Co-PI, Associate Provost for Academic Administration
- Nancy Love, Co-PI and Advance Professor, Professor of Civil and Environmental Engineering
- Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering
- Roseanne Foti, Advance Professor, Associate Professor of Psychology
- Beate Schmittmann, Advance Professor, Professor of Physics (on sabbatical spring 2006)
- Nancy Ross, Associate Dean for Research, Graduate Studies, and Outreach, College of Science (spring 2006)
- Tonya Smith-Jackson, chair of the planning committee for *AdvanceVT*'s Transforming the Professoriate Conference, Associate Professor of Industrial and Systems Engineering (spring 2006)
- Elizabeth Creamer, Assessment Director, Professor of Educational Leadership and Policy Studies
- Peggy Layne, Project Director

Work Groups

Each *AdvanceVT* work group is led by a Co-PI or Advance professor and is responsible for development, implementation, and oversight of a portion of the four major program elements. During year three, most of the work groups operated primarily through project level subcommittees.

Policy Review

Chair: Patricia Hyer, Co-PI, Associate Provost for Academic Administration
Co-Chair: Anne Zajac, Associate Professor, Biomedical Science

- Susanne Aref, Research Scientist, Statistics
- Jim Blair, Associate Vice-President for Research

- Karen DePauw, Vice Provost for Graduate Studies and Dean of the Graduate School
- Sam Easterling, Professor, Civil and Environmental Engineering
- Jack Finney, Professor and Department Head, Psychology
- Carola Haas, Associate Professor, Fisheries and Wildlife Science
- Anne McNabb, Professor, Biological Sciences, and Associate Dean, Graduate School
- Deborah Olsen, Associate Professor, Educational Leadership and Policy Studies

Empowering Women as Leaders and Scholars
Chair: Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering

Subcommittee, Research Seed Grants
Chair: Madeline Schreiber, Associate Professor, Geological Sciences

- Roger Avery, Associate Dean for Research and Graduate Studies, College of Veterinary Medicine
- Ed Henneke, Associate Dean for Research and Graduate Studies, College of Engineering
- Kathleen Meehan, Assistant Professor, Electrical and Computer Engineering
- Nancy Ross, Associate Dean for Research, Graduate Studies, and Outreach, College of Science
- Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering

Subcommittee, Leadership Development Program
Chair: Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering

- Brad Fenwick, Vice-President for Research
- Roseanne Foti, Advance Professor, Associate Professor of Psychology
- Beth Grabau, Associate Professor, Plant Pathology, Physiology, and Weed Science
- Nancy Lutz, Associate Professor, Economics
- Elaine Scott, Professor, Mechanical Engineering

Subcommittee, Leadership Fellowships
Chair: Karen Thole, Co-PI and Advance Professor, William S. Cross Professor of Mechanical Engineering

- Andrea Dietrich, Professor, Civil and Environmental Engineering
- Roseanne Foti, Advance Professor, Associate Professor of Psychology
- Bob Jones, Professor and Department Head, Biological Sciences
- Janet Rankin, Professor, Human Nutrition, Foods, and Exercise
- Glenda Scales, Associate Dean, Distance Learning, College of Engineering
- Brenda Winkel, Professor, Biological Sciences

Increasing Representation of Women Faculty in Science and Engineering
Chair: Beate Schmittmann, Advance Professor, Professor of Physics (on sabbatical spring 2006)

Subcommittee, Faculty Recruitment

- Martha Ann Bell, Associate Professor, Psychology
- Mary Kasarda, Associate Professor, Mechanical Engineering
- Glenda Gillaspy, Associate Professor, Biochemistry
- Brian Love, Professor, Material Science and Engineering

Subcommittee, *AdvanceVT* Visiting Scholars

- Beate Schmittmann, Advance Professor, Professor of Physics (chair, fall 2006, on sabbatical spring 2006)
- Vicky Soghomonian, Associate Professor, Physics (chair, spring 2006)
- Lynn Nystrom, News and External Affairs Director, College of Engineering
- Tonya Smith-Jackson, Associate Professor, Industrial and Systems Engineering

Advancing Women into Faculty Careers
Chair: Nancy Love, Co-PI and Advance Professor, Professor of Civil and Environmental Engineering

Subcommittee, Ph.D. and Post-doctoral fellowships
Chair: Nancy Love, Co-PI and Advance Professor, Professor of Civil and Environmental Engineering

- Dan Farkas, Professor, Mathematics
- Peter Haskell, Professor, Mathematics
- Scott Midkiff, Professor, Electrical and Computer Engineering
- Susan Sumner, Professor and Department Head, Food Science and Technology
- Mary Leigh Wolfe, Associate Professor, Biological Systems Engineering

Subcommittee, Graduate Student and Post-doc Seminars
Chair: Elisa Sotelino, Professor, Civil and Environmental Engineering

Subcommittee, Transforming the Professoriate Conference
Chair: Tonya Smith-Jackson, Associate Professor, Industrial and Systems Engineering

- Karen DePauw, Vice Provost for Graduate Studies and Dean of the Graduate School
- Alejandra Medina, Senior Research Associate, Virginia Tech Transportation Institute
- Nancy Ross, Associate Dean for Research, Graduate Studies, and Outreach, College of Science
- Bevlee Watford, Associate Dean for Academic Affairs, College of Engineering (on leave 2005-06)
- Sharnnia Artis, Graduate Student, Industrial and Systems Engineering
- Kayenda Johnson, Graduate Student, Industrial and Systems Engineering

- Deborah Johnson, Graduate Student, Biochemistry
- Cortney Martin, Graduate Student, Industrial and Systems Engineering
- Amanda Olson, Graduate Student, Geosciences
- Tonya Saddler, Graduate Student, Educational Leadership and Policy Studies
- Amanda Young, Graduate Student, Aerospace and Ocean Engineering

Activities and Findings

Research and Evaluation Activities and Findings

During year three the *AdvanceVT* assessment team continued to interview faculty hired in the colleges of science and engineering in 2003 and 2004, completed analysis of the university-wide faculty survey fielded in spring 2005, evaluated the research seed grant and leadership development programs, and conducted a collaborative cross-institutional benchmarking study of Advance Institutional Transformation Grant recipients.

Science and Engineering 2003-04 New Hire Cohort Interviews
The assessment director continued the practice of conducting annual informal interviews with members of the faculty cohort who first joined the Virginia Tech science and engineering faculty in 2003 and 2004. Findings are interesting because they offer a way to capture the issues faculty see as pressing in each of the early years of their appointment. In year three, participants described the challenge of managing multiple grants and supervising a growing team of graduate students.

Faculty Climate Survey
During the third year of the project, *AdvanceVT* engaged a faculty member on campus, Dr. Deborah Olsen, associate professor, educational leadership and policy studies, and a doctoral student in statistics, Stephanie Pickle, to move beyond descriptive statistics to develop a statistical model that predicts Virginia Tech faculty members' work satisfaction and intent to leave based on responses to the 2005 faculty survey. They conducted this analysis during summer and fall 2005, and presented their findings to a university wide audience in February 2006.

Olsen's and Pickle's work confirmed that a number of factors embedded in the organization of the original questionnaire did, indeed, play a significant role in predicting faculty job satisfaction and intent to leave. These are: university and departmental climate; collaboration/networking; resources; work-life/non-work-life balance; balance between teaching, research, service, and outreach; and job security. University and departmental climate had the largest role in predicting job satisfaction and the effects of gender were mediated by university and departmental climate. This validates the argument that departmental and university climate are key to faculty job satisfaction for both men and women, but particularly women.

Research Seed Grant and Leadership Development Program Evaluations
In the spring of 2006 the assessment team interviewed all ten recipients of research seed grants in years two and three, and seven of the eight participants in the first year of the

leadership development program. While all participants felt that they had benefited from the programs, they provided constructive suggestions for improvement that will be implemented during year four. Reports from these evaluations are included as attachments.

Advance Collaborative Benchmarking Study with the University of Michigan
During summer and fall 2005, Ellen Plummer of the *AdvanceVT* assessment team and Abigail Stewart, PI of the University of Michigan's Advance program, conducted telephone interviews with two people from the leadership teams of each of the Round 1 and Round 2 ADVANCE institutional transformation grant recipient institutions. During spring 2006, Elizabeth Creamer of Virginia Tech and Janet Malley of University of Michigan collaborated on the coding and analysis of the field notes prepared after each interview. Malley and Creamer presented a summary of the findings from this study at the May 2006 ADVANCE PI meeting in Arlington, VA.

A surprising finding was that there was not a significant difference in the extent of institutional change reported by Round 1 and 2 Advance institutions. A second key finding from the study is that while there is a common set of strategies that seem to promote institutional transformation, there were differences in the types of strategies that were associated with different types of interventions. This was particularly true for the types of leadership required. Respected faculty members are critical to transforming recruiting strategies, while top-level administrators were key to policy and procedure change.

Lessons Learned from Assessment during Year Three
A great deal of time was devoted in year three to preparing and disseminating reports summarizing key findings from the 2005 Faculty Work-Life Survey. Different formats, from one-page summaries to four to five page reports with graphs and figures, were employed to reach a wide readership. The history department has used these reports as part of their faculty professional development activities.

The challenge in year four will be not so much to collect more data, but to find creative ways to disseminate the findings to have a local impact. *AdvanceVT* will continue to use findings from the Faculty Work-Life Survey in several Advance activities, including a new program to address department climate and for the annual, university-wide workshop.

Training and Development Activities

Institutionalizing Change

During year three the Policy Review work group focused on revising the "stop-the-clock" policy and drafting a policy on "modified duties". Co-PI Pat Hyer, Associate Provost for Academic Administration, served as chair of the policy work group; Dr. Anne Zajac, associate professor of biomedical science in the college of veterinary medicine, served as

co-chair. Advancing new or revised policies required significant involvement with existing university governance structures, especially the Commission on Faculty Affairs and the Faculty Senate, which were deeply involved in the discussions and supportive of the proposed policies. The President of the Faculty Senate participated in a team registration with the Provost and Associate Provost at an invitational conference on Flexible Policies for Faculty Careers hosted by the Sloan Foundation and the American Council on Education in September 2005. The conference provided encouragement for and detailed guidance on the development of family friendly policies for research universities.

In addition to policy work accomplished through the *AdvanceVT* work group and faculty governance structures, there were significant accomplishments by other university committees and offices on issues identified by Advance: childcare, dual career hires, and special reports on a variety of topics. The Co-PI /Associate Provost continued to play a key role in having these issues addressed by the Provost's Office and other university structures and committees.

Significant Accomplishments for Year Three:

- Dual Career Hires
  - A Dual Career Assistance Program was established and a coordinator hired in October 2005. The coordinator reports to and works jointly with the Provost's Office and Human Resources. A brochure was prepared to describe available services and an additional website completed: http://www.hr.vt.edu/employment/dualcareer/. This website is complementary to the "prospective faculty" website developed last year for the Provost's page. The Associate Provost and Dual Career Coordinator visited with department heads in each of the eight colleges to describe the available services.
  - A data base to track dual career cases and standard reports to monitor activity and outcomes were developed.
  - The number of dual career hires receiving assistance from the office (or other university entities) has dramatically increased. In 2004-05, 18 dual career couples were identified. In 2005-06, 54 dual career couples were tracked as part of new hiring for either fall 05 or fall 06 and five couples involved retention for existing faculty members. Of the new appointments, 37 of the primary hires accepted Virginia Tech's offer as of June 2006; 8 declined; and 9 are still in recruitment as of this report. Sixteen spouses or partners were offered and accepted faculty employment; three accepted employment as classified personnel; 1 accepted non-Virginia Tech employment; others are pending.
- Stop-the-Clock Policies
  - The long-standing policy language was revised to accomplish several objectives: 1) to make a probationary period extension *automatic* upon request for new parents at the birth or adoption of a child, thereby encouraging men to use the policy as well as women; 2) to adopt policy language that more

closely mirrored practice in terms of acceptable justifications, such as research start-up problems; and 3) to set a limit of two tenure clock extensions for all reasons. Other family or personal health reasons would continue to be supported on a discretionary basis.
    - The policy revision was approved through university governance during spring 2006, and approved by the Board of Visitors on June 12, 2006. The revised policy will be incorporated into the Faculty Handbook during summer 2006 and subsequently widely disseminated.
- Modified Duties:
    - After extensive web research and phone calls to other research universities with modified duties policies, a policy was drafted for Virginia Tech. The policy received extensive discussion with the Policy Workgroup and with the Commission on Faculty Affairs and Faculty Senate.
    - On June 12, 2006, the Board of Visitors approved the new policy providing for one semester of reassigned duties for tenured or tenure-track faculty members coping with intense periods of family or personal issues.
    - It is anticipated that the Provost's Office will assist departments by providing a modest allocation to fund an appropriate accommodation during the semester. The policy goes into effect fall 2006.
- Child Care:
    - The Associate Provost and the Assistant Vice President for Human Resources co-chaired a university-level task force to develop recommendations and a business plan for addressing child care needs on the Blacksburg campus.
    - A report was prepared and presented to the Provost and Executive Vice President in March 2006. The report recommends moving as quickly as possible to developing another full-day care option.
    - A "utilization survey" was sent electronically to all faculty under 50 years of age and to graduate students in May 2006 to estimate faculty and graduate student interest in the proposed center and parent cooperative options. Analysis of the survey results will take place over summer 2006, and the next steps planned from that point.
- University Wide Faculty Work Life Conference for Academic Leaders
    - The President's Office co-hosted with *AdvanceVT* a university-wide meeting of academic leaders in October 2005 to address issues of work life balance and to share findings of several critical reports (see below), including the *AdvanceVT* faculty work-life survey.
    - Approximately 120 department heads, deans, and faculty leaders attended and participated in discussions following the presentation of data excerpts from the various studies.
- Special Reports on Crucial Topics
    - The Survey Research Center, Human Resources, and the Provost's Office collaborated on a survey of faculty and staff members who had voluntarily left Virginia Tech over the period May 2002-December 2004. The report, prepared by the Survey Research Center, was presented to the Commission on Faculty Affairs, the Commission on Equal Opportunity and Diversity, the Staff Senate, and to academic departments heads as part of the October 2005

Work Life Conference. The report is available at: http://www.provost.vt.edu/web_pages/Worklife_Documents.html.

- The Provost's Office prepared a report titled: Voluntary Departures Among Tenured and Tenure-Track Faculty at Virginia Tech: A Gender Perspective. The report was disseminated at the October 5, 2005 Work Life Conference for department heads.
- A report was prepared by the Provost's Office from the findings of the faculty focus groups conducted in April 2005: Worklife Issues at Virginia Tech: A Report of Faculty Discussion Groups April 2005. This report was also disseminated and discussed at the October 5, 2005 Work Life Conference for department heads, and to the Faculty Senate.

Empowering Women as Leaders and Scholars

The work group in consultation with the leadership team and executive committee implemented a formal leadership development program for women faculty in year three, continued the research seed grant program, and hosted several distinguished lecturers.

Significant Accomplishments in Year Three:

- Implementing a formal Leadership Development Program for Women Faculty
  Dr. Roseanne Foti, Associate Professor of Psychology, led the planning and implementation of a leadership development program for women faculty. Each participant completed an assessment of her current leadership skills with input from her colleagues, and Dr. Foti worked with the participants to prepare individualized development plans. *AdvanceVT* offered a series of leadership skill workshops and seminars designed around the participants' strengths and weaknesses that were also open to faculty campus-wide. Workshop and seminars addressed negotiations and conflict resolution and the roles of university leaders, including the provost, vice-president for research, deans and department heads. The first cohort of eight participants included women from five of the university's eight colleges. One of the participants has been appointed head of the department of plant pathology, physiology, and weed science in the College of Agriculture and Life Sciences; another is currently associate dean for outreach and external affairs in the College of Liberal Arts and Human Sciences; a third has been appointed assistant department head in Biological Systems Engineering. An evaluation of the first year of the leadership development program is included as an attachment.
  The second cohort of five women was selected in spring 2006 and is currently in the process of completing their self assessments. Members of the second cohort include:
  - **Dr. Kimberly Ellis,** Associate Professor, Industrial and Systems Engineering. Dr. Ellis's research program addresses operational planning problems that arise in manufacturing and service systems. Dr. Ellis teaches courses in Production Planning and Systems Engineering and she is the recipient of the Ralph R. Teetor Award for Young Educators from the Society of Automotive

Engineers and the Sporn Award for Teaching from the College of Engineering.

- **Dr. Shannon Jarrott,** Associate Professor, Human Development. Dr. Jarrott's research focuses on dementia care and intergenerational programs. As the Director of Research at Virginia Tech's Adult Day Services, Dr. Jarrott introduces and assesses innovative programs, which have included intergenerational programming, therapeutic horticulture, Montessori programming, and reminiscence therapy.
- **Dr. Eva Marand,** Associate Professor, Chemical Engineering. Dr. Marand's research interests focus on the development and study of polymeric and hybrid organic-inorganic membranes, particularly in understanding the role of molecular structure, morphology and molecular interactions on gas selectivity and permeability. Her primary research projects include the development of mixed matrix membranes consisting of highly gas selective zeolites, carbon nano-tubes or layered inorganic sheets in polymer matrices.
- **Dr. Vicky Soghomonian,** Associate Professor, Physics. Dr. Soghomonian's current research focuses on the synthesis, fabrication and characterization of biological, organic, and hybrid organic/inorganic nanoscale devices and assemblies. Areas of study include charge transport measurements through variously modified DNA molecules to elucidate the relationship of DNA structure to its charge transport properties, charge transport measurements in organic and bioorganic single crystal and thin film geometries to elucidate charge injection characteristics in these systems, atomic force microscopy studies of self-assembled patterns of biomolecules on various surfaces, and hydro- and solvo-thermal synthesis of novel zeolitic materials with desired functionalities.
- **Dr. Brenda Winkel,** Professor, Biological Sciences. Dr. Winkel's recent efforts have been focused on developing new paradigms for graduate research and training, including leading the establishment of a new cross-college Molecular Plant Sciences Graduate Program with support from an *AdvanceVT* Leadership Fellowship, and serving as a Co-PI on a new $3.4M NSF IGERT project, Exploring Interfaces in Graduate Education and Research.

- Supporting emerging women leaders at Virginia Tech
  During year three, no *AdvanceVT* Leadership Fellowships were awarded. Due to the small number of applications received for the leadership fellowships in year one, the funds originally proposed for this activity were redirected to the Leadership Development Program in year three. Leadership fellowships have been reinstated for year four, and three women have been selected to receive the fellowships:
  - **Dr. Karen Inzana**, Professor, Small Animal Clinical Sciences. Dr. Inzana will lead a review of the fourth year experience in the College of Veterinary Medicine.
  - **Dr. Kathleen Jones**, Associate Professor, History. Dr. Jones will work with the Associate Dean of the College of Liberal Arts and Human Sciences to implement the college diversity plan.

- **Dr. Mary Kasarda**, Associate Professor, Mechanical Engineering. Dr. Kasarda will work with the university's government relations staff on research and academic policy issues.

- Bringing role models to campus
  AdvanceVT hosted the following distinguished lecturers in year three:
  - **Dr. Mildred Dresselhaus**, professor of physics and electrical engineering, Massachusetts Institute of Technology, hosted by Giti Khodaparast, spoke to a standing room only crowd of more than 200. Dr. Dresselhaus' visit was co-hosted with the physics department as part of their celebration of the World Year of Physics.
  - General Electric Aircraft Engines Vice-President and General Manager **Jeanne Rosario** visited campus and met with faculty, administrators, and students.
  - **Dr. Kathy Banks**, professor and interim head of the school of civil engineering at Purdue University, visited campus, had dinner with women faculty, and talked with graduate students and post-docs about academic job interviews. Her visit was co-hosted with the Virginia Tech Department of Civil and Environmental Engineering.
  - A panel discussion on Women Leaders in Academe: Personal Perspectives and Future Directions, included guest speakers **Dr. Barbara Baird**, Cornell University, director, nanobiotechnology center; **Dr. Diane Souvaine**, Tufts University, chair, computer science; **Dr. Laurie McNeil**, University of North Carolina, chair, physics; **Dr. Judy Vance**, Iowa State University, chair, mechanical engineering; and **Dr. Nancy Ross**, associate dean, College of Science, Virginia Tech. The speakers were hosted on campus by participants in *AdvanceVT*'s leadership development program.

- Supporting career development of junior faculty with research seed grants
  AdvanceVT selected six junior women faculty members from the colleges of science and engineering as recipients of its third round of research seed grants (year four). Eligibility for the grants was extended to include scientists and engineers in the colleges of science, engineering, agriculture, natural resources, and veterinary medicine. The deans of participating colleges provide matching funds for this program. Previous recipients of research seed grants were interviewed by the *AdvanceVT* assessment team in the spring of 2006, and a copy of the evaluation report is included as an attachment. As a result of this feedback, additional networking opportunities will be provided for seed grant recipients in year four. Reports from this year's research seed grant recipients are also attached. This year's selection process was coordinated by *AdvanceVT* Seed Grant Recipient Dr. Madeline Schreiber. New seed grant recipients are as follows:
  - **Dr. Linda Dahlgren**, Assistant Professor, Large Animal Clinical Sciences. Dr. Dahlgren proposes to lay the groundwork necessary to establish an expertise in the application of stem cell technologies to tendon healing. *AdvanceVT* funding will support intensive training in flow cytometry and the validation of flow cytometry assays necessary to acquire preliminary data for federal funding. In addition, Dr. Dahlgren will utilize *AdvanceVT* funding to

travel to Louisiana to establish a research collaboration in the field of stem cell biology, and to the NIH to establish a rapport with selected program directors and increase her understanding of the federal funding process.

- **Dr. Zhiliang Fan**, Assistant Professor, Biological Systems Engineering. Dr. Fan's research is focused on developing biocatalyst and biocatalytic strategies to economically convert abundant renewable resources into valuable products with a minimal impact on the environment. In this project, she proposes to develop a new high throughput selection method for extracellular enzyme improvement via evolutionary methods.
- **Dr. Lisa Kennedy**, Assistant Professor, Geography. Dr. Kennedy's research addresses the emerging field of paleotempestology, which aims to reconstruct past hurricanes from geological proxies found in coastal lagoons and wetlands. She will analyze sediment cores from several coastal lakes in the Dominican Republic to identify and date storm deposits, such as coarse sands, shells, and other materials, that are laid down on top of fine lagoonal sediment during major storm events. These sediments can provide high resolution records of prehistoric hurricane frequency and intensity, and thus increase understanding of climate change and enhance predictions of future hurricane landfalls.
- **Dr. Tanya LeRoith**, Assistant Professor, Biomedical Sciences. Dr. LeRoith's proposed research addresses characterization of the protective immune response to hepatitis E virus (HEV), an extremely understudied cause of hepatitis, especially in pregnant women. This research is important in understanding why pregnant women develop such severe disease with HEV infection, and will ultimately be important in optimizing vaccine development.
- **Dr. Jennifer Ryan**, Assistant Professor, Mathematics. Dr. Ryan's proposed research will focus on effectively modeling shocks using the discontinuous Galerkin numerical method. This will be done by combining the polynomial based discontinuous Galerkin method with the wavelet-based multi-resolution analysis technique. The main application of this research will be in climate modeling.
- **Dr. Dorothea Tholl**, Assistant Professor, Biological Sciences. Dr. Tholl proposes to explore the function of volatile compounds in plant defense against soil-borne pathogens and insect pests by employing plant molecular and genomics tools, root-volatile metabolite profiling, and olfactometer assays. The research allows a transfer of knowledge to agricultural applications such as the development of alternative pest controls.

Increasing Representation of Women in Science and Engineering

During year three the Increasing Representation work group continued its work with search committees and departments on successful faculty searches and hosted several visiting scholars.

Significant Accomplishments in Year Three:

- Increasing awareness and effectiveness of search committees
  - Members of the subcommittee on faculty recruitment met with search committees and departments in the colleges of engineering and science to discuss keys to successful faculty searches and sources of unintentional bias in the hiring process.
  - A brochure highlighting research on sources of unconscious bias and ways to overcome them was printed and distributed.
  - *AdvanceVT* professors and work group members met with numerous faculty candidates as part of ongoing searches in the colleges of science and engineering.
- Co-hosting visits by young scholars and potential faculty candidates
  Visits included a technical talk, a networking lunch or reception, and informal interactions between speakers and interested women at Virginia Tech. During year three, five visiting scholars visited Virginia Tech under the auspices of *AdvanceVT*:
  - **Ms. Nichole Rylander**, completing her Ph.D. in biomedical engineering at the University of Texas, Austin, co-hosted with the mechanical engineering department (Dr. Rylander has since accepted a position in the mechanical engineering department at Virginia Tech, starting in fall 2006.)
  - **Dr. Karen Allen**, professor of physiology and biophysics at Boston University, in conjunction with the chemistry department
  - **Dr. Tanya Wickliff**, recent Ph.D. recipient in engineering management and organizational development from Texas A & M, co-hosted with Virginia Tech's department of engineering education
  - **Dr. Vivian Sullivan**, analytical chemistry manager at Argonne National Lab, co-hosted with the physics department
  - **Dr. Theresa Mayer**, professor of electrical engineering at Penn State, co-hosted with the department of electrical and computer engineering

Advancing Women into Faculty Careers

The focus of the Advancing Women work group continues to be on activities that empower female graduate students and post-doctoral research associates through fellowships with a significant mentoring component, exposure to successful female faculty role models, and networking opportunities. A subcommittee of the work group continued planning for a national career development conference for women graduate students and post-docs on Transforming the Professoriate, to be held at Virginia Tech in July 2006.

Significant Accomplishments in Year Three:

- Focusing on graduate students
  - *AdvanceVT* hosted a series of monthly lunches for graduate students and post-docs on topics related to preparing for faculty careers. Topics included

balancing work and family, academic job interviews, technical presentations, and grant proposal writing.

- Mentoring the next generation of faculty
  - *AdvanceVT* Professor Love and *AdvanceVT* project director Layne met with the year three PhD fellows funded by *AdvanceVT* and their mentors to discuss their career development and future plans and ways to improve the *AdvanceVT* fellowship program.
- Providing fellowships for Ph.D. candidates and post-doctoral research associates. Subcommittees of the work group reviewed the procedures and criteria for *AdvanceVT* Ph.D. and post-doctoral research fellowship competitions, and selected two Ph.D. candidates and five post-doctoral fellows for year four of the grant. (One post-doctoral fellow subsequently declined the award.) Eligibility for Ph.D. and post-doctoral fellowships was expanded to include scientists and engineers in fields in which women are underrepresented on the faculty in the colleges of agriculture and life sciences, natural resources, and veterinary medicine, in addition to science and engineering. Women with non-traditional career paths were strongly encouraged to apply for the post-doctoral fellowships. The fellowship application process requires submission of a mentoring plan to maximize the continued professional development of the awardees toward faculty careers. Year four fellowship recipients are:
  - **Jessica Homyack , Ph.D. Fellow, Fisheries and Wildlife Science**
    Jessica graduated with a B.S. in Wildlife and Fisheries Resources, Magna Cum Laude from West Virginia University in 1999. She has a M.S. in Wildlife Ecology from the University of Maine where she was voted the outstanding graduate student in her department in 2003. Prior to coming to the Department of Fisheries and Wildlife Sciences at Virginia Tech, Jessica was a Fish and Wildlife Biologist for the Wyoming Ecological Services Field Office of the U.S. Fish and Wildlife Service. For her dissertation research, Jessica is investigating the experimental effects of forest regeneration methods on salamander populations in Virginia and West Virginia. Jessica is married to Tom Gorman, who also is a PhD student in Wildlife Sciences, and she looks forward to utilizing her *AdvanceVT* fellowship to explore issues in academia related to dual career relationships and balancing family and work.
  - **Michelle Soupir , Ph.D. Fellow, Biological Systems Engineering**
    Ms. Soupir obtained her B.S. from Kansas State University and her M.S. from Virginia Tech. She is currently researching the transport of fecal bacteria from pasturelands to determine if cells are transported to surface waters in the planktonic or attached phase. She plans to graduate with her Ph.D. from Virginia Tech in the summer of 2007.
  - **Francis Bonier, Postdoctoral Fellow, Biology**
    Frances Bonier is currently a Ph.D. candidate in Zoology at the University of Washington. She will be defending her dissertation in July of 2006. Fran received her M.S. in Zoology in 2001 from the University of Idaho, where she investigated noninvasive detection of steroid hormones in cougars. For her dissertation, Fran investigated evolutionary, behavioral, and physiological responses to urban breeding habitat in songbirds. As a postdoctoral researcher,

she will be working with Dr. Ignacio Moore at Virginia Tech, investigating the role of mountain ranges and asynchronous seasonality in promoting population divergence in songbirds in the Ecuadorian Andes.

- **Patricia Dos Santos, Postdoctoral Fellow, Biochemistry**
  Patricia C. Dos Santos received a B.S. degree in Pharmacy from Universidade Federal do Rio Grande do Sul in Porto Alegre, Brazil and a Ph.D. in Biochemistry from Virginia Tech. She is currently a postdoctoral fellow in Dennis R. Dean's laboratory at Virginia Teach. Patricia's research interest involves the *in vivo* assembly of Fe-S clusters. The *AdvanceVT* fellowship will provide funding for her study of how gram-positive bacteria build these essential metal complexes.
- **Deborah Johnson, Postdoctoral Fellow, Biochemistry**
  Deborah holds a B.S. in Microbiology from the University of Warwick (UK) and a Postgraduate Diploma in Education (PGDE) from the University of Southampton (UK). She came to Blacksburg in 1997 and taught biology at Blacksburg High School. She returned to graduate school in 2000 and completed her M.S. and Ph.D in the Departments of Biology and Biochemistry, respectively. She aims to use this fellowship to pursue an academic career in science education research, investigating the circumstances that allow science learners to develop and apply an understanding of scientific inquiry and the nature of science.
- **Jianhua Yang, Postdoctoral Fellow, Biological Sciences**
  Jianhua obtained her Ph.D. in Biochemistry in State University of New York at Buffalo in December 2005. She worked on the regulation of heme biosynthesis and iron metabolism in the bacterium *Bradyrhizobium japonicum*. At present, Dr. Yang has expanded her research interest towards areas of investigation that involve human diseases. She works in Dr. Finkielstein's laboratory where she studies the mechanisms that control cell division and how its de-regulation leads to uncontrolled cell proliferation. Many human diseases, ranging from cancer and coronary artery diseases to Alzheimer, result from abnormal function of key components that mediates the decision to undergo cell death or division. A detailed understanding of how these molecules interact and their roles in cell signaling will provide new targets for drug development and disease treatment.

- Planning for Transforming the Professoriate conference on preparing for faculty careers, July 20-22, 2006
  - Dr. Tonya Smith-Jackson, associate professor of industrial and systems engineering, chairs the planning committee for the Transforming the Professoriate Conference.
  - Publicity and registration for the conference were coordinated with the University of Maryland, Baltimore County (UMBC) Advance program, building on their two years of experience with their Faculty Horizons conference.

Other Year Three Activities and Accomplishments

- Building Community among Women
  - Co-hosted a second annual fall welcome reception for women faculty and graduate students in collaboration with the Graduate School, Women's Center, Women's Studies Program, and the Organization of Women Faculty.

- Building Awareness and Understanding University-Wide
  - Held third annual Advancing Women at Virginia Tech workshop on February 2 – 3, 2006, in conjunction with the Mid-Atlantic Conference on the Scholarship of Diversity. Over 100 Virginia Tech faculty members attended. The workshop included presentations on predictors of faculty job satisfaction from the faculty survey conducted in spring 2005 and an overview of keys to success in institutional transformation from other Advance grant recipients. Small group discussions developed college level action plans to address faculty work/life issues identified by the faculty survey.

- Developing More Aware and Effective Leaders
  - Hosted a university-wide meeting for academic leaders (120 deans, department heads, and others) to address faculty work-life issues. Presented data on faculty work-life from the *AdvanceVT* survey, findings from faculty focus groups conducted in spring 2005, and provided copies of report from recent faculty exit surveys. (All reports available at http://www.provost.vt.edu/web_pages/Worklife_Documents.html) Participants held table discussions to process key findings from the various reports.
  - Presented on faculty work-life issues to University Academic Advisory Council on Strategic Planning, the Faculty Senate, the faculty association in Veterinary Medicine, faculty and department heads in the College of Liberal Arts & Human Sciences, and to the Board of Visitors.
  - Presented and facilitated a discussion at the Department Heads Roundtable on leadership styles, the positive outcomes associated with transformational leadership, and how department heads can use a transformational leadership style to achieve department goals.

Outreach

AdvanceVT team members gave several presentations about the program at other universities and professional conferences.

- Presented a poster on "Bridges to Institutional Transformation" at the WEPAN annual conference in Pittsburgh, PA, June 12-13, 2006.
- Participated as a discussant on the panel "Advancing Women in Science through Institutional Transformation" at the AAAS Annual Meeting in St. Louis, MO, February 20, 2006.

- Presented a poster at the Convocation on Biological, Social, and Organizational Contributions to Science and Engineering Success hosted by the National Academies Committee on Women in Academic Science and Engineering in Washington, DC, December 9, 2005.
- Presented symposium on institutional transformation for women at the Association for the Study of Higher Education, November 18, 2005.

Products

Publications

AdvanceVT developed a brochure on unrecognized biases and assumptions in the hiring, promotion, and tenure processes, building on work done by the University of Wisconsin Advance program. The brochure summarizes and provides references to research on unconscious biases that affect both women and men when they evaluate vitas and write letters of recommendation, and complements the presentations made by *AdvanceVT* to search committees. The brochure was distributed to search committees in fall 2005 and is available on the web at http://www.advance.vt.edu/Resources_&_Links/Search_Committee_Resources/Unrecognized_Biases.pdf .

AdvanceVT developed a progress report highlighting accomplishments over the first two years of the program and distributed it to all teaching and research faculty on campus in December 2006. The progress report was also distributed at several conferences and the content is posted on the *AdvanceVT* web site.

AdvanceVT prepared three short, newsletter style, reports and one-page flyers summarizing key findings from the spring 2005 faculty survey in the areas of leadership, recruitment, and work-life. The reports were distributed to university leaders and at *AdvanceVT* events and are posted on the web site at http://www.advance.vt.edu/Measuring_Progress/reports.htm. The one-page flyers were mailed to all teaching and research faculty on campus.

AdvanceVT developed and distributed six newsletters highlighting activities during the fall semester 2005 and spring semester 2006, accomplishments of women faculty at Virginia Tech, and statistics on women in science and engineering at Virginia Tech and nationwide. The newsletters are distribute in hard copy to university deans, center directors, and department heads as well as at *AdvanceVT* events, are sent out by email to work group and committee members and posted on the *AdvanceVT* website at http://www.advance.vt.edu/News_&_Events/Past_Newsletters.htm .

Websites

The *AdvanceVT* website, www.advance.vt.edu, was completely redesigned in fall 2005 to make the site more user friendly. The site includes information about the Virginia Tech Advance leadership team, funding opportunities, accomplishments of women scientists and engineers at Virginia Tech, upcoming activities, a description of *AdvanceVT*'s assessment plan and informational resources for women graduate students and faculty.

The site includes a copy of Virginia Tech's Advance proposal to NSF and links to the NSF Advance website as well as websites belonging to the other NSF Advance Institutional Transformation grant recipients. Annual reports, data from the faculty survey, and other institutional data on women in science and engineering are also posted on the *AdvanceVT* website.

The Advance portal website, www.advance-portal.net, was also reorganized during summer and fall 2005 with new categories to facilitate access to information. The site is designed to serve as a center of communication among Advance project team members. It is organized to include links to important information based on pre-defined categories, includes a search engine and links to the 19 institutional host sites. Feature articles highlight events and activities of interest to the Advance community.

A website describing services of the Dual Career Assistance Program was also developed during 2005-06: http://www.hr.vt.edu/employment/dualcareer/.

Attachments

Year Three Financial Report and Year Four Funding Request

Quantitative Indicators of Activity and Progress

Leadership Development Program Evaluation Report

Research Seed Grant Evaluation Report

Research Seed Grant Recipient Reports

AdvanceVT Year Three Financial Report and Year Four Revised Budget Request

Budget Explanation for Current Year (Year Three)

Table 1 summarizes the budgeted and actual costs for the third year of the grant, including the Advance portal web site. Specific cost elements are explained below.

A. Senior Personnel

Mark McNamee continued to serve as Principal Investigator for year three of the grant and provides overall oversight of the program. Dr. McNamee will continue in this role during year four. Five percent of Dr. McNamee's salary is provided by the university as cost sharing.

Patricia Hyer, Co-Principal Investigator, serves as a member of the leadership team and continued to lead the policy review and implementation effort. Twenty-five percent of Dr. Hyer's salary is provided as a cost share to *AdvanceVT* from the provost's office for each year of the program.

Nancy Love, Co-Principal Investigator and Advance professor, continued to lead the work element on advancing women into faculty careers. In the third year of the grant, Dr. Love received one month of summer salary funded by the grant.

Tonya Smith-Jackson, associate professor of industrial and systems engineering, joined the leadership team in spring 2006 as chair of the planning committee for *AdvanceVT*'s Transforming the Professoriate conference. Dr. Smith-Jackson received one course buy-out funded by the grant.

Karen Thole, Co-Principal Investigator and Advance professor, continued to lead the work element on empowering women as leaders and scholars. In the third year of the grant, Dr. Thole received one course buy-out paid for by the grant.

Beate Schmittmann, Advance professor, continued to lead the work element on increasing representation of women during fall 2005. In the third year of the grant, Dr. Schmittmann received one course buy-out during the fall semester paid for by the grant. Dr. Schmittmann was on sabbatical during spring 2006.

Roseanne Foti, Advance professor, continued to be responsible for the *AdvanceVT* leadership development program. Dr. Foti received a course buy-out during the spring semester funded by the grant.

Elizabeth Creamer directs the assessment effort of Virginia Tech's Advance program. In the third year of the grant, Dr. Creamer received two course buy-outs and one month of summer salary paid for by the grant.

Peggy Layne, program director, provides full time day-to-day management of *AdvanceVT* program activities. During the third year of the grant, her salary was paid for with returned overhead as part of the university's cost sharing commitment.

Total expenditures for senior personnel direct charged to the grant in year three are $79,545. This amount is within one percent of the NSF approved budget for year three.

B. Other Personnel

Administrative Support
Barbara Johnson provided full-time administrative support to the *AdvanceVT* program until her retirement at the end of March 2006. Robyn Midkiff was hired to replace Ms. Johnson in mid-April. Their salaries are provided as a cost share by the provost's office.

Graduate Students
Valerie Glass was the graduate assistant for *AdvanceVT*'s assessment program during the third year of the grant. Her assistantship and tuition were paid for with grant funds.

Ane Johnson was *AdvanceVT*'s programmatic graduate assistant during the third year of the grant, providing support to the program director and the leadership team. Her assistantship, summer salary, and tuition were paid for with grant funds.

Laurian Hobby was the web master for maintenance and upgrades of the Advance Portal web site. Her assistantship and tuition were paid for out of the supplemental grant funds for the portal web site.

During the third year of Virginia Tech's Advance program, the graduate school provided support for two graduate assistants. These assistantships supported two graduate students, Cortney Martin in Industrial and Systems Engineering and Sara Haden in Psychology. Their assistantships and tuition were provided as cost sharing by the graduate school.

Post-doctoral associates
AdvanceVT funded two post-doctoral associates during the third year of the grant, Dr. Charlotte Wahl in Mathematics and Dr. Elena Burguera in Materials Science and Engineering. Dr. Burguera obtained a permanent position at another university and left Virginia Tech in November 2005.

Undergraduate students
An undergraduate student was employed on an hourly basis to transcribe tapes of interviews conducted as part of *AdvanceVT*'s assessment program.

Total expenditures for other personnel directly charged to the grant in year three are $99,701. This amount is about 23% below the budgeted amount of $130,320 as a result of Dr. Burguera's departure from Virginia Tech, leaving funds budgeted for a post-doctoral fellow unspent for the remainder of the year.

C. Fringes

During the third year of the grant, fringe benefits are calculated at 33.25% for faculty on calendar year appointments and 40.75% for staff. For faculty on academic year appointments, fringes are calculated at 33.25% during the academic year and 9.5% during the summer. Fringes for post-doctoral associates are calculated at 34.25%, and graduate assistants are calculated at 6.25%. In year three, $37,165 will be spent on fringes. This amount is less than the approved budget because a lesser amount was spent on salaries.

D. Equipment

No equipment was purchased using grant funds during year three.

E. Travel

In 2006, members of the *AdvanceVT* leadership team traveled to participate in the annual Advance principal investigators' meeting at NSF in May. *AdvanceVT* provided travel support for a Co-PI and the president of the faculty senate to attend the Michigan CRLT players workshop on interactive theater and for three women faculty to attend workshops organized by the Women in Engineering Leadership Institute. Several members of the *AdvanceVT* team attended conferences throughout the year and presented information about the program. In addition, *AdvanceVT* provided travel support for three distinguished lecturers and five visiting scholars during the third year of the grant.

Total travel expenditures for year three are anticipated to be $21,407. This amount is 29% below the approved amount. Faculty have not been available to make recruiting trips to conferences and other institutions as originally planned, and fewer visiting scholars were proposed this year compared with last year.

F. Participant Support

AdvanceVT hosted its third workshop for the Virginia Tech community in February 2005, in conjunction with the Mid-Atlantic Conference on the Scholarship of Diversity. This annual event is a very effective way to reach a wide audience across campus. *AdvanceVT* will host a national conference for graduate students and post-doctoral researchers preparing for faculty careers in July 2006. Costs for this event are anticipated to be almost double the amount budgeted due to increased airfares. The total amount of participant support costs in year three is expected to be $52,311, almost 80% higher than budgeted.

G. Other Direct Costs

G.1 Materials and supplies

AdvanceVT incurred expenses for the purchase of software and general office supplies. Grant funds were also expended for costs related to meetings of the work groups, executive committee, and seminars with visiting speakers. Virginia Tech will participate in the Collaborative on

Academic Careers in Higher Education (COACHE) this year in order to obtain additional data on the work environment for junior faculty both at Virginia Tech and comparable institutions. Fees for participation in COACHE are reported here. Total expenses for materials and supplies in year three were $27,802.

G.2 Publication costs

In the third year of the grant, *AdvanceVT* made increased visibility of the program both on campus and in the wider community a high priority, and produced a variety of printed materials towards that end. A progress report brochure was distributed to all teaching and research faculty on campus and one page flyers summarizing key findings from the 2005 faculty survey were also distributed to all faculty. Six newsletters and three newsletter-style reports on the faculty survey findings were distributed to campus leaders and posted on the web. A brochure on unconscious bias in evaluations was printed and distributed widely to departments and search committees. The total amount spent on publications in year three was $16,109. This is almost triple the approved amount.

G.3 Consultants

AdvanceVT employed a local facilitator for planning meetings with the leadership team. Costs for these services in the third year of the grant were $16,050. This amount is about 24% more than the NSF approved budget.

G.4 Computer services

No computer services costs were incurred for the Advance program.

G.5 Subcontracts

No subcontracts were issues as part of the Advance program.

G.6 Other

Total costs of $141,728 were incurred in this category for year three of the grant, including tuition waivers for graduate assistants, research seed grants for five junior faculty members, expenses for the leadership development program for senior women faculty, and charges for telephone and data lines. This is 9% below the NSF approved budget. Funds originally budgeted in this category for departmental incentive grants were not expended in year three.

H. Total direct

Total direct costs charged to the grant in year three were $491,818 vs. a budget of $522,716. Most of the difference is attributable to spending less than planned on salaries and fringes for post-doctoral fellows.

I. Total indirect

Total indirect costs incurred in year three of the grant were $218,777. Indirect costs are incurred on all direct costs with the exception of tuition and equipment.

J. Total direct + indirect

Total direct and indirect costs direct charged to the grant in year three are $710,595 vs. a budget of $756,876, a variance of 6%.

K. Residual

Remaining unexpended funds of $46,281 are requested to be carried over to year four of the grant. Some of the funding will be used for its originally intended purpose, e.g. faculty salaries, speakers, events, meetings, and travel, while some may be reallocated following a review and evaluation of this year's activities and priority setting for year four.

L. Amount of request for year four

See the following section for the revised year four budget request and explanation.

M. Cost sharing

Cost sharing provided by the provost's office, the graduate school, and returned overhead in year three included PI, co-PI, project director, and administrative assistant salaries, and two graduate assistantships, and is projected to total $266,328 for the period 9/1/05-8/31/06.

Table 1
***AdvanceVT* Year Three Budget Analysis**
(Includes Advance Portal Website)

	Year 3 Approved Budget	Year 3 Including Portal Website	Year 3 Expenses (Estimated)	Variance from Approved	% Variance
A. Senior Personnel	$75,000	$79,165	$79,545	($380)	(0.5)
B. Other personnel					
B.1. Post-doctoral associates	$81,000	$81,000	$48,368	$32,632	40
B.2. Other professionals	$0		$0		
B.3. Graduate students	$38,759	$48,320	$51,053	($2,733)	(6)
B.4. Secretarial/ Clerical	$0		$0		
B.5. Undergraduate Students	$1,000	$1,000	$280	$720	72
B.6. Other	$0		$0		
Total salaries + wages	$195,759	$209,485	$179,246	$30,239	14
C. Fringe benefits	$52,822	$53,453	$37,165	$16,288	30
Total salaries, wages + fringe	$248,582	$262,939	$216,411	$46,528	18
D. Permanent equipment	$0		$0	$0	
E. Travel (domestic)	$30,000	$30,000	$21,407	$8,593	29
F. Participant support	$29,250	$29,250	$52,311	($23,061)	(79)
G. Other direct costs					
G.1 Materials & supplies	$26,500	$27,000	$27,802	($802)	(3)
G.2 Publications	$5,000	$5,000	$16,109	($11,109)	(222)
G.3 Consultants	$13,000	$13,000	$16,050	($3,050)	(23)
G.4 Computer services	$0		$0		
G.5 Subcontracts	$0		$0		
G.6 Other	$151,940	$155,527	$141,728	$13,799	8.9
Total other direct costs	$196,440	$200,527	$201,689	($1,162)	(1)
H. Total direct costs	$504,272	$522,716	$491,818	$30,898	(6)
I. Total indirect costs (46.2% excluding tuition & equip.)	$226,602	$234,161	$218,777	$15,384	7
J. Total direct + indirect	$730,873	$756,876	$710,595	$46,281	6
K. Residual funds				$46,281	
L. Amount this request	730,873				
M. Cost sharing	$270,647		$266,328	($4319)	(2)

AdvanceVT Year Four Revised Budget Request

Budget Explanation for Revised Year Four Request

Forward funding for year four of Virginia Tech's Advance grant was approved August 23, 2005, contingent on submission of the year three annual progress report and approval by the NSF Grants Officer. Table 2 summarizes revised budgeted costs for the fourth year of the grant and variations from the approved budget based on experience to date. The total amount budgeted for year four, $715,023, is the same as that previously approved. Specific cost elements are explained below. Supplemental funding for the Advance portal web site was provided on a two-year basis, and no additional funds for the portal web site are reflected in the year four budget.

A. Senior Personnel

Provost Mark McNamee will continue to provide overall leadership to Virginia Tech's Advance project as Principal Investigator. Five percent of Dr. McNamee's salary is provided as a cost share to *AdvanceVT* from the provost's office.

Patricia Hyer will continue to serve as a Co-Principal Investigator and to lead the work element on institutional change, focusing on policy review and implementation. Twenty-five percent of Dr. Hyer's salary is provided as a cost share to *AdvanceVT* from the provost's office.

Nancy Love, Co-Principal Investigator and Advance professor, will return to her research and no longer serve as a member of the Leadership Team. *AdvanceVT* is in the process of recruiting another faculty member to lead the pipeline activities, and 10% of her or his salary will be paid for by the grant.

Karen Thole, Co-Principal Investigator and Advance professor, will leave Virginia Tech to accept the position of head of the department of mechanical and nuclear engineering at Penn State in July 2006. Another faculty member will be recruited to join the leadership team and will receive a 10% buy out paid for by the grant during year four.

Roseanne Foti, Advance professor, will continue to lead the leadership development program as part of the work element on empowering women. In the fourth year of the grant, 10% of Dr. Foti's salary is paid for by the grant.

Beate Schmittmann, Advance professor, will become head of the department of physics at Virginia Tech in fall 2006 (the first female department head in Virginia Tech's colleges of science or engineering). In the fourth year of the grant, another faculty member will be recruited to direct recruitment activities for *AdvanceVT*, and will receive approximately 10% of their salary paid for by the grant.

Elizabeth Creamer directs the assessment effort of Virginia Tech's Advance program. In the fourth year of the grant, 10% of Dr. Creamer's time during the academic year and one month of summer salary are paid for by the grant.

Peggy Layne, program director, provides full time day-to-day management of *AdvanceVT* program activities. In the fourth year of the grant, Ms. Layne's salary will be cost shared through overhead return.

In order to increase the involvement of women faculty at Virginia Tech in the Advance project, we anticipate providing financial support in the form of course buy-outs, summer salary, or travel money for additional individuals who make significant contributions to the project goals by taking the lead on a particular project or activity. These individuals will be identified in summer or fall 2006.

Proposed total expenditures for senior personnel direct charged to the grant in year four are $68,000.

B. Other Personnel

Post-Doctoral Fellows
AdvanceVT has awarded four partial post-doctoral fellowships for year four of the grant.

Administrative Support
Robyn Midkiff provides full-time administrative support to the *AdvanceVT* program. Her salary is cost shared by the provost's office.

Graduate Students
A graduate student will be recruited to provide support for assessment activities during year four of the grant. Her assistantship, summer salary, and tuition will be paid with grant funds.

Ane Johnson, a doctoral student in educational leadership and policy studies, will continue to provide support to the program director during year four of the grant. Her assistantship, summer salary, and tuition will be paid for with grant funds.

During year four of the grant, the graduate school will provide cost sharing support for two female graduate students in science and/or engineering.

Undergraduate Students
An undergraduate student will be hired on an hourly basis to transcribe interview tapes as needed.

Total expenditures for other personnel direct charged to the grant in year four are $126,018.

C. Fringes

During the fourth year of the grant, fringe benefits are calculated at 32.75% for faculty and 44.5% for staff. Fringes for graduate assistants are calculated at 7.5%, and fringes for research faculty, including post-docs are calculated at 35%. In year four, $50,567 will be spent on fringes. This is an increase over the original proposal budget due to increases in the university's negotiated fringe rates.

D. Equipment

No permanent equipment will be purchased with grant funds.

E. Travel

In year four, members of the *AdvanceVT* leadership team and work groups will travel to participate in the Advance annual principal investigators' meeting. Members of the *AdvanceVT* team will also travel to other Advance institutions, other universities, and conferences to benchmark best practices, share lessons learned, and develop relationships with potential future faculty candidates. *AdvanceVT* also anticipates bringing a variety of speakers to Virginia Tech throughout the year for seminars and workshops, including external consultants, senior scholars, doctoral students and post-doctoral scholars for pre-recruitment visits. Total travel expenditures for year four are budgeted at $23,250.

F. Participant Support

In year four of the grant, *AdvanceVT* will host another workshop for Virginia Tech faculty with a high level outside speaker. Also budgeted in this category are incentives for faculty to participate in interviews as part of *AdvanceVT*'s assessment program. Total budgeted participant support costs for year four are $8590.

G. Other Direct Costs

G.1 Materials and supplies

In year four of the grant, *AdvanceVT* will again incur expenses for general office supplies and costs related to meetings of the work groups, leadership council, advisory committee, and seminars with visiting speakers. Total budgeted expenses for year four are $18,500. This amount is less than that in the original proposal based on experience in prior years.

G.2 Publication costs

In the fourth year of the grant, *AdvanceVT* will produce additional newsletters and informational materials to publicize program activities and findings, including educational materials for search committees. The budgeted amount is $4,000.

G.3 Consultants

In year four of the grant, *AdvanceVT* will engage the services of outside advisors or gender equity experts for workshops and seminars and provide speaker honoraria for high level visiting scholars. The budgeted amount is $9,000. This amount is less than that in the original proposal budget based on experience in prior years.

G.4 Computer services

No computer services costs are anticipated for the Advance program.

G.5 Subcontracts

No subcontracts are anticipated as part of the Advance program.

G.6 Other

AdvanceVT has awarded six research seed grants to junior women faculty to assist them in preparing grant proposals for external funding for year four of the grant, and three leadership fellowships for senior women faculty preparing for positions of higher responsibility in the university. *AdvanceVT* has also selected five women for the second year of a structured leadership development program. The program includes assessment, preparation of individualized development plans, and a series of informational and skill building workshops for participants and other women faculty. Also in this category are funds for departmental incentives to support participation in *AdvanceVT* or other gender equity related activities, tuition waivers for graduate assistants working on the project, and dedicated telephone and data lines for the *AdvanceVT* office. The total budgeted amount is $185,725.

H. Total direct

Total direct costs charged to the grant in year four are budgeted at $493,649.

I. Total indirect

Total indirect costs incurred in year four of the grant are budgeted at $221,375. Indirect costs are incurred on all direct costs with the exception of tuition.

J. Total direct + indirect

Total direct and indirect costs direct charged to the grant in year four are budgeted at $715,024.

K. Residual

AdvanceVT anticipates spending all of the requested funds on the activities described.

L. Amount of request for year four

AdvanceVT requests approval to spend the previously provided amount of $715,023 for year four of the grant.

M. Cost sharing

Cost sharing provided by the provost's office, the graduate school, and returned overhead in year four will include PI, Co-PI, program director, and administrative assistant salaries, and two graduate assistantships, totaling $288,763, exceeding the required amount of $143,013.

Table 2
***AdvanceVT* Year Four Revised Budget Request**

	Approved Year 4 Budget	Revised Year 4 Budget Request
A. Senior Personnel	69,526	68,000
B. Other personnel		
B.1. Post-doctoral associates	90,738	86,265
B.2. Other professionals	0	0
B.3. Graduate students	53,100	38,752
B.4. Secretarial/ Clerical	0	0
B.5. Undergraduate Students	0	1,000
B.6. Other	0	0
Total salaries + wages	213,364	194,018
C. Fringe benefits	38,408	50,567
Total salaries, wages + fringe	251,772	244,584
D. Permanent equipment	0	0
E. Travel (domestic)	24,500	23,250
F. Participant support	8,750	8,590
G. Other direct costs		
G.1 Materials & supplies	35,000	18,500
G.2 Publications	5,000	4,000
G.3 Consultants	20,500	9,000
G.4 Computer services	0	0
G.5 Subcontracts	0	0
G.6 Other	147,954	185,725
Total other direct costs	208,454	217,225
H. Total direct costs	493,476	493,649
I. Total indirect costs (46.2% excluding tuition & equip.)	221,547	221,375
J. Total direct + indirect	715,023	715,024
K. Residual funds	0	0
L. Amount this request	715,023	715,023
M. Cost sharing	143,013	288,763

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

PAGE 1 of 1

Investigator: **Mark McNamee**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Bridging the Gap Between New Materials, Fuel Cell Devices and Products: An Alliance of Virginia Universities (VT-VCU)

PI : James E. McGrath Co-PI: Mark McNamee

Source of Support: NSF

Total Award Amount: $ 600,000.00 Total Award Period Covered: May 1, 2004 – April 30, 2006; NCTE to April 30, 2007

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ADVANCE Institutional Transformation Award

PI: Mark McNamee Co-PIs: Karen Thole, Nancy Love, Patricia Hyer

Source of Support: National Science Foundation

Total Award Amount: $ 3,734,965 Total Award Period Covered: 9/01/03 – 8/31/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

PAGE 1 of 1

Investigator: **Patricia Hyer**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ADVANCE Institutional Transformation Award

PI: Mark McNamee Co-PIs: Karen Thole, Nancy Love

Source of Support: National Science Foundation

Total Award Amount: $ 3,734,965 Total Award Period Covered: 9/01/03 – 8/31/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ADVANCE Institutional Transformation (supplement for website development)

Co-PIs: Karen Thole, Nancy Love

Source of Support: National Science Foundation

Total Award Amount: $ 94,671 Total Award Period Covered: 07/14/04 – 07/13/06

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

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PAGE 1 of 1

Investigator: **Elizabeth Creamer**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Investigating the Gender component: Cultures that Promote Equity in Undergraduate Engineering

Co-PIs: Carol Burger, Peggy Meszaros

Source of Support: NSF

Total Award Amount: $ 448,970 Total Award Period Covered: 10/01/05-09/30/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: .5 Sumr: 2

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

GSE: Further Development of the IT Career Choice Model through Research and Dissemination

Co-PIs: Carol Burger, Peggy Meszaros

Source of Support:

Total Award Amount: $ 194,456 Total Award Period Covered: 10/01/04-09/30/06

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: 1 Acad: Sumr: 2

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

RES – Women in Information Technology: Pivotal Transition from School to Careers Supplement

Co-PIs: Carol Burger, Peggy Meszaros

Source of Support: NSF

Total Award Amount: $ 134, 250 Total Award Period Covered: 10/01/04-08/30/05

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: 1 Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Advance Institutional Transformation

Co-PIs: Mark McNamee, Patricia Hyer, Karen Thole, Nancy Love

Source of Support: NSF

Total Award Amount: $ 3,734,965 Total Award Period Covered: 9/01/03 – 8/31/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: 0.9 Sumr: 1.0

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

PAGE 1 of 1

Investigator: **B. Schmittmann**

Other agencies (including NSF) to which this proposal has been/will be submitted.

NSF

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Statistical Mechanics of Systems far from Equilibrium

Co-PIs: R. K. P. Zia

Source of Support: NSF

Total Award Amount: $ 555,000 Total Award Period Covered: 6/1/04 – 5/31/07

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: 0 Acad: 2.25 Sumr: 2.00

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Phase Transitions in Systems Driven into Non-Equilibrium Steady States

Co-PIs: E. Praestgaard, Z. Racz

Source of Support: NATO

Total Award Amount: $ 6,300 Total Award Period Covered: 1/1/97 – 12/31/06

Location of Project: Virginia Tech, Roskilde (Denmark), Budapest (Hungary)

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 0.25

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ADVANCE Institutional Transformation Award

PI: Mark McNamee Co-PIs: Karen Thole, Nancy Love, Patricia Hyer

Source of Support: National Science Foundation

Total Award Amount: $ 3,734,965 Total Award Period Covered: 9/01/03 – 8/31/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: 1 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Co-PIs:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

PAGE 1 of 1
Investigator: **Roseanne J. Foti**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

IGERT: Exploring interfaces through graduate education and research

Co-PIs: Mike Hochella, John Little, George Filz, Beate Schmittmann, Brenda Winkel
Source of Support: NSF

Total Award Amount: $ 3,398,801 Total Award Period Covered:

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .8

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

The effects of experience on the content and structure of cognitive categories about leadership

Co-PIs:
Source of Support: Army Research Institute

Total Award Amount: $ 118,300 Total Award Period Covered: 10/1/05 – 9/30/06

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: .25 Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

A cost-benefit utility analysis of alternative treatment methods

Co-PIs: Robert Stephens, John Donovan
Source of Support: NIH

Total Award Amount: $ 500,000 Total Award Period Covered: 2 years

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: .5 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ADVANCE Institutional Transformation Award

PI: Mark McNamee Co-PIs: Karen Thole, Nancy Love, Patricia Hyer
Source of Support: National Science Foundation

Total Award Amount: $ 3,734,965 Total Award Period Covered: 9/01/03 – 8/31/08

Location of Project: Virginia Tech

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 1

AdvanceVT Year Three Quantitative Indicators of Activity and Progress

As part of the reporting requirements of Virginia Tech's Advance Institutional Transformation award, the National Science Foundation requires a set of quantitative and qualitative indicators of project performance and impact on an annual basis. Virginia Tech is currently completing the third year of its Advance program. Where possible, indicators are reported with data from prior years for comparative purposes. The format for this annual reporting reflects the suggestions presented in the *Proposed Toolkit for Reporting Progress toward NSF ADVANCE: Institutional Transformation Goals*. Additional detail on tenure, promotion, and time in rank is provided through continued reporting of the cohort analysis that was included in *AdvanceVT*'s first annual report.

Indicators presented below include numbers and percentages of women scientists and engineers in various categories at Virginia Tech and analyses of gender effects on promotion and tenure, recruitment, and start-up packages. *AdvanceVT* continues to use these data indicators internally for program planning and with the university community in a variety of formats, including presentations to university administrators as well as in newsletters and on the *AdvanceVT* web site.

Faculty by Appointment Type, Rank, and Gender

Table 1 shows the number and percent of women faculty in the Virginia Tech Colleges of Science and Engineering by department, the number and percent of women in tenure-line positions by rank and department, and the number of women in science and engineering who are in non-tenure-track positions. Percentages from the previous two years are included for comparison.

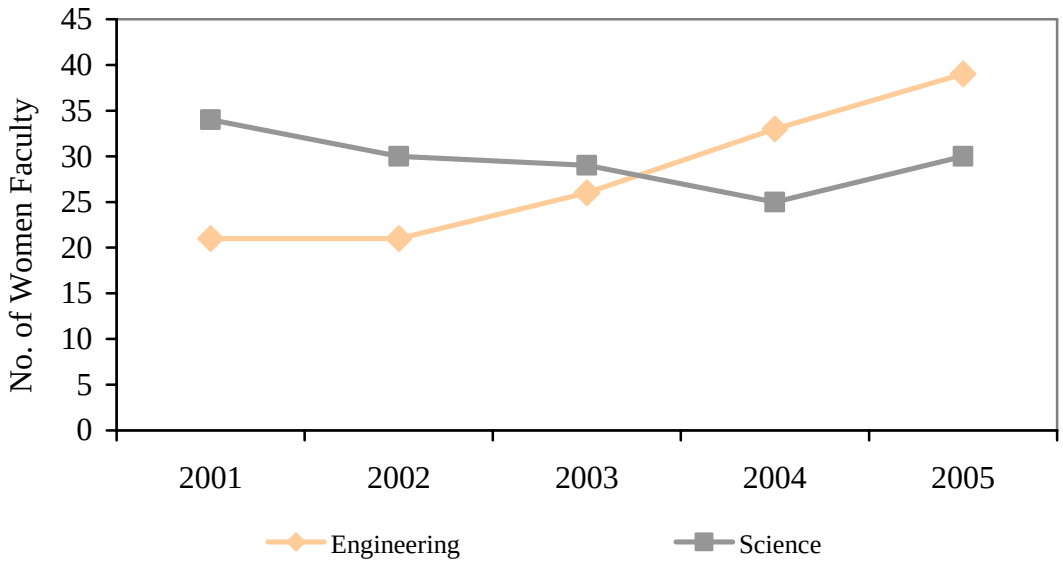
Only faculty in the standard academic ranks of assistant, associate, or professor are eligible to earn tenure at Virginia Tech. Administrators cannot earn tenure in an administrative appointment, but retain their tenure if earned previously as part of an academic appointment. In fall 2005, there were 302 tenured and tenure-track faculty in the College of Engineering, of which 39 (12.9%) were women. This is a significant increase from the fall of 2003 when there were 26 (9.4%) women. Nationwide, 10.4% of tenured and tenure track engineering faculty were women in 2004, according to the American Society for Engineering Education's Profiles of Engineering and Engineering Technology Colleges. Two engineering departments continue to have no women faculty on the tenure track.

The College of Science had 191 tenured and tenure-track faculty in fall 2005; 36 were women (15.7%). The number of women in the College of Science decreased between 2001 and 2004, but is now beginning to recover.

The scarcity of women at the senior-most ranks remains an issue since low numbers of full professors mean the pool of experienced women available for appointments to professorships and chairs and important policy making committees is very limited. The number of women at the rank of professor in the College of Engineering increased to eight (6%) in 2005 through

promotions and hiring, an increase of four since 2003. The College of Science also has eight women (7%) at the rank of professor, losing one woman professor since the fall of 2003.

Tenured and Tenure-Track Women Faculty in the Colleges of Engineering and Science Fall 2001 - 2005



Source: Virginia Tech Office of Institutional Research and Policy Analysis

There are three other major categories of faculty appointments at Virginia Tech: administrative and professional (A/P), non-tenure track instructional, and special research faculty. A/P faculty in the two colleges are generally the deans and assistant/associate deans and professional staff for college-level functions. When A/P positions appear in departments, these individuals are typically professional fiscal officers or academic advisors. Both colleges have strong representation of women on the dean's staff. The College of Engineering has an associate dean for academic affairs (on leave at NSF during 2005-06) and an associate dean of distance learning and computing, both are African American women. The College of Science has an associate dean of research, graduate studies, and outreach, and an associate dean of curriculum, instruction, and advising; both positions are filled by women faculty members.

Non-tenure-track instructional faculty include individuals on visiting appointments, lecturers, or those on short or long-term instructor appointments. The College of Science has far more such positions than the College of Engineering, teaching many sections of lower division mathematics and science courses; about half of the non-tenure appointments in the College of Science are in the department of mathematics. Women fill about half of these appointments college wide.

A growing category of employment at Virginia Tech is the special research faculty whose primary responsibility is sponsored research. There are a number of ranks used within the special research faculty category. These include postdoctoral associate, research or project associate, research scientist, and research professor, among others.

To put these college numbers within the perspective of the university as a whole, 2004 marked the first year a slight increase in total numbers of tenure track faculty had been recorded in several years, with 1281 tenured and tenure track faculty university wide. That total increased to 1326 in fall 2005. Prior to 2004, the total tenured and tenure track faculty university wide decreased from 1418 in fall 2001, to 1331 in fall 2002, to 1262 in fall 2003; an 11% reduction. The reduction in administrative and professional faculty over the same period was 13.6%. Much of the loss was a result of an early retirement program offered as part of the university's budget reduction strategies. In addition, there have been resignations as faculty have sought better opportunities and salaries elsewhere. Rebuilding of the faculty has begun although it will take some time and substantial budget increases to recover. (Source: IR website, www.irpa.vt.edu, file name: HC_trend_fa97-05_AllVT_final.xls)

Tenure and Promotion Outcomes by Gender

Due to low representation of women in the assistant, associate, and professor ranks in the College of Engineering and College of Science, few women are reviewed for tenure on a yearly basis. Table 2 summarizes the number of men and women in the College of Engineering and College of Science who have been reviewed for either a promotion, tenure, or simultaneously reviewed for promotion and tenure for one year prior to receiving the Advance grant (2002-2003) and three years following its inception.
All female candidates from both colleges have successfully met the criteria for promotion and/or tenure over the past four years.

Years in Rank by Gender, Promotion to Associate Professor

Table 3 summarizes the current status of faculty hired at Virginia Tech as assistant professors between 1996 and 2004, including attrition and time to promotion. During those eight years, a total of 44 assistant professors were hired in the College of Science (32 men and 12 women) and 80 assistant professors were hired in the College of Engineering (60 men and 20 women). Of those hired, 21 have subsequently left Virginia Tech (nine scientists, three female and six male, and 12 engineers, three female and nine male). Roughly equal proportions of male and female scientists and more than half of the engineers have been promoted to associate professor.

Men were more likely to be hired with prior experience and credit towards tenure than women. Two of the female assistant professors and two male professors hired during this time period extended the tenure clock for family reasons. Average time to promotion for assistant professors hired between 1997 and 2000 in the College of Engineering was 4.5 years for women and 4.8 years for men. In the College of Science, average time to promotion for women in this group was 6.1 years and for men 5.0 years.

Years in Rank by Gender, Promotion to Professor

Table 4a summarizes time in rank by examining scientists and engineers hired during 1996-2001 as assistant professors who have been promoted to professors. Scientists and engineers hired as associate professors who have been promoted to professors are summarized in Table 4b. Among the 55 assistant professors hired (13 women, 42 men) between 1997 and 2001 in the College of

Engineering, one male and one female engineer have been promoted to professor. The College of Science hired 32 assistant professors during this same time period (five women, 22 men). Two male scientists (9.0%) hired as assistant professors have been promoted to professor. None of the women in the College of Science who were hired as assistant professors have been promoted to professor.

During 1996-2001 the College of Engineering hired two women and 20 men at the associate professor rank. Among those hired as associate professors in the College of Engineering, six males (30%) have been promoted to the rank of professor after four years in the associate professor rank. The College of Science hired four women and eight men at the associate professor rank. Among those hired, two males (25%) have been promoted to professor after spending four years in the rank of associate professor. None of the female scientists hired as associate professors have been promoted to professor as of June of 2006.

Time at Institution by Gender

Table 5 shows average years at Virginia Tech for tenure-track faculty in the Colleges of Science and Engineering by rank and gender, as well as for the university as a whole. The average length of service at Virginia Tech for male professors in engineering is 18.5 years versus women professors who have on average 11.3 years. In science, the average years of service for male professors is 23.5 years versus women who have on average 18.8 years. University wide, male professors have been at Virginia Tech about 21.3 years versus females who have 18.0 years. Not surprisingly, these data show that women are relatively recent additions to the faculty ranks in engineering and science.

Attrition

Table 6 summarizes the number of voluntary non-retirement departures by rank and gender for the College of Science and the College of Engineering from 1997-2005. The proportion of women leaving is significantly higher than for men (see Table 3). Departures among female scientists and engineers, regardless of rank, during the initial years of the Advance grant (2003-05) appear to be consistent with years prior to the grant's inception.

Leadership Positions

Table 7 summarizes the number of women faculty in various administrative and leadership positions in each college since the inception of the Advance grant. Data for the 2003-04, 2004-05, and 2005-06 academic years are presented. Leadership positions include administrative positions, professorships, and membership on promotion and tenure committees.

Women in Administrative Positions

Of the eight academic deans at Virginia Tech, one (Agriculture and Life Sciences) is a woman. In addition, the Dean of Libraries is a woman. This has remained consistent for the past three academic years. Six (25%) of the associate deans in the academic colleges are women, plus one woman associate dean in the Graduate School (33%). Only nine of the 68 (12%) academic

department heads are women; six of the nine women heads are in the College of Liberal Arts and Human Sciences. Women are also scarce in senior-level leadership positions at the university. The three most senior positions (president, provost, executive vice president) are held by men; one woman serves as Vice President for Development and University Relations, another serves Vice President for Student Affairs, and a third as Vice Provost for Graduate Studies and Dean of the Graduate School. Three women (16%) are directors of university-level research centers.

Professorships

Table 7 also presents data on the gender of endowed professors or eminent scholars at the college and university level at Virginia Tech. Endowed professorships at Virginia Tech are a fairly recent phenomenon, dating back to the first capital campaign in the mid-1980s. Prior to that the university had established a rank for the most distinguished faculty using state funds; these were called University Distinguished Professors (UDP). UDP appointments are restricted to no more than 1% of the full-time faculty, and they remain the most prestigious faculty appointment for outstanding researchers. The Alumni Distinguished Professor (ADP) is also a coveted university-wide appointment which recognizes those whose contributions have been especially strong in teaching and service, although the selected faculty also have very substantial research records. Unlike the University Distinguished Professorships, the ADP appointments are endowed by donations from alumni. They are currently being awarded for a ten-year period. Both types of distinguished professor appointments are made on the basis of a call for nominations university-wide; a university-level committee makes recommendations for appointments to the provost and president. One of 13 (8%) UDPs is female; 3 of 11 (27%) ADPs are female.

Faculty members selected for an endowed professorship or chair position receive a stipend and sometimes a small operating account. The amount of the stipend varies greatly, based in part on the value of the endowment and other factors. Typically these appointments are for life, although a number are rotating or renewable term appointments. Virtually all of the current endowed professors and chairs hold the rank of professor. Recommendations for appointment are typically made by department or college honorifics committee, approved by the dean, and submitted to the Board of Visitors for ratification.

Professorships are often restricted to a particular specialty, department, or college, depending on the donor's intent. The number of endowed professors varies greatly by college, depending on the capacity of donors associated with private giving to the college, and the historical success of the deans in attracting such gifts. Given the distribution of women by rank at Virginia Tech, particularly in science and engineering, it is no surprise that women are not well represented among either UDPs, ADPs, or eminent scholars from these two colleges. There are currently eight women at the professor rank in science and eight in engineering, and many of these have only recently been promoted to professor.

AdvanceVT Co-PI and Advance Professor Karen Thole became the first female engineering faculty member to hold an endowed professorship in 2005-06, joining one female mathematician among the university's 106 eminent scholars (holder of an endowed professorship or chair). Two

other women are identified as eminent scholars, both in the College of Liberal Arts and Human Sciences.

Promotion and Tenure Committees

The University Promotion and Tenure Committee includes nine faculty representatives (one from each college and one at-large) and the eight academic college deans. The Provost serves as non-voting chair. During the 2003-04 and 2004-05 cycle, the majority of the faculty representatives (5 of 9) were women. During 2005-06, 4 of 9 members were women, with the proportion of women on the committee still greatly exceeding their representation among full professors. One of the eight academic deans is female, as shown in Table 7.

Review for promotion and tenure (P&T) takes place at three levels at Virginia Tech. Department-level committee structures vary in size and membership. In small departments, it is common for all tenured associate and full professors to participate. In larger departments, committee members may be elected, or some elected and some appointed. Table 8 shows the gender composition of department and college promotion and tenure committees in the Colleges of Science and Engineering.

During the 2005-06 academic year, 6 of the 11 departments in the College of Engineering had at least 1 woman member on the P&T committee. This represents an increase from the representation of women on P&T committees during 2003-04. In the College of Science, five of the eight departments included women members on the P&T committee during the 2005-06 academic year.

College-level promotion and tenure committees also vary in their membership. The College of Engineering P&T committee includes faculty representatives and all department heads, with a total of 25 members during 2005-06. Three members were women, an increase over the past two years. During the 2005-06 academic year, the College of Science had a nine-member P&T committee with three women members.

Recruitment and Start-up Packages

Significant attention has been given to the recruitment of women in the College of Engineering and College of Science over the past three years.

Recruitment

Table 9 summarizes the number and percent of new hires in the College of Engineering and the College of Science from fall 1998 to September 30, 2005. Recruitment of female scientists and engineers has improved following the inception of the Advance grant in 2003. Thirty-six percent (36%) of assistant professors hired during the 2005-06 academic year in the College of Engineering were women. Eighty percent (80%) of hires at the assistant professor rank and the only individual hired at the associate professor rank in the College of Science were female in this most recent year. In the College of Engineering, 11% of new hires were female at the associate professor rank and one (17%) of the six new hires at the rank of professor was female.

Start-up Packages of Newly Hired Science and Engineering Faculty by Gender

Virginia Tech has a fairly complete database of start-up packages for new faculty hired in the fall of 2005. Because the number of faculty (especially women faculty) hired in any single department in a given year is small, specific data are not reported here in order to protect individual confidentiality. A more rigorous analysis of possible gender effects controlling for academic discipline (at the department level) may require aggregating data across several years.

During the 2005-06 academic year, the Virginia Tech College of Engineering provided an average start-up package (exclusive of salary) for female assistant professors of $120,113 while the average startup package for male assistant professors was $134,665. The value of start-up packages for assistant professors in the College of Engineering ranged from a low of $35,000 in Engineering Education to a high of $207,500 in Computer Science. The average start-up package for female associate professors was $153,695, while the average for male associate professors was $297,239, and values ranged from $140,000 to $421,468. No women were hired at the rank of professor in the College of Engineering this year. The average start-up package for males hired at the rank of professor was $292,833, and values ranged from $0 to $635,000.

The College of Science provided an average start-up package for female assistant professors of $232,566 during 2005-06 and the comparable figure for male assistant professors is $241,042 with a range of $0 in economics to $482,083 in biological sciences. At the associate professor level, the average start-up package for female new hires was $206,359 while for males it was $531,000, with values ranging from $58,218 in statistics to $657,500 in biological sciences. The College of Science did not hire any women at the level of professor. The average start-up package for males hired at the rank of professor was $133,033.

Salary

A complete salary equity study was conducted during year one of Virginia Tech's Advance program and included with the first annual report. Multiple regression techniques following the *Paychecks* methodology were used to assess the impact of gender on faculty salaries across the university. In year two, Virginia Tech computed average, minimum, and maximum salaries by gender and rank for departments in the colleges of engineering and science. Virginia Tech continues to monitor equity in faculty salaries, and the Office of Institutional Research and Effectiveness is currently preparing a report for presentation to the university's Board of Visitors in August 2006. That report is not available for inclusion with this annual report, but will be completed by the end of the current grant year.

Table 1. Number and Percent of Women in Science/Engineering by Rank and Department, Fall 2005

Tenured and Tenure Track Faculty

	Women			Men			% Women Fall 2005 Within Rank			% Women Fall 2004 Within Rank			% Women Fall 2003 Within Rank		
	Prof	Assoc	Asst.	Prof.	Assoc	Asst.	Prof	Assoc	Asst	Prof.	Assoc	Asst.	Prof.	Assoc	Asst.
College of Engineering	**8**	**15**	**16**	**127**	**88**	**48**	**6%**	**15%**	**25%**	**4%**	**15%**	**24%**	**3%**	**11%**	**19%**
Aerospace and Ocean Eng	-	1	1	11	2	3	-	33%	25%	-	33%	-	-	25%	-
Biomedical Engineering	-	-	-	-	1	1	-	-	-	-	-	-			
Chemical Engineering	-	1	-	5	2	2	-	33%	-	-	50%	-	-	40%	-
Civil & Env. Engineering	3	2	1	20	14	3	13%	13%	25%	-	19%	67%	-	11%	67%
COE Northern Virginia	-	-	1	5	5	4	-	-	20%	-	-	-	-	-	-
Computer Science	-	2	2	8	11	7	-	15%	22%	-	22%	18%			
Electrical Engineering	1	2	1	26	15	16	4%	12%	6%	4%	6%	8%	3%	-	11%
Engineering Fundamentals	-	3	4	1	6	1	-	33%	80%	-	25%	60%	-	-	50%
Eng. Science & Mechanics	-	-	-	17	6	2	-	-	-	-	-	-	-	-	-
Industrial & Systems Eng.	-	3	3	6	6	3	-	33%	50%	-	22%	80%	-	20%	67%
Materials Engineering	2	-	1	6	3	1	25%	-	50%	29%	-	50%	25%	-	-
Mechanical Engineering	2	1	2	16	15	4	11%	6%	33%	12%	8%	17%	13%	8%	20%
Mining & Minerals Eng.	-	-	-	5	2	1	-	-	-	-	-	-	-	-	-
College of Science	**8**	**12**	**10**	**101**	**50**	**10**	**7%**	**19%**	**50%**	**7%**	**18%**	**33%**	**8%**	**20%**	**36%**
Biological Sciences	3	2	3	17	8	2	15%	20%	60%	14%	22%	50%	15%	11%	80%
Chemistry	2	1	-	14	9	1	13%	10%	-	6%	22%	-	6%	22%	-
Economics	-	1	-	7	2	1	-	33%	-	14%	-	-	14%	20%	-
Geosciences	-	2	-	9	6	-	-	25%	-	-	17%	100%	9%	25%	33%
Mathematics	2	1	2	33	5	3	6%	17%	40%	3%	22%	-	3%	22%	-
Physics	1	-	2	7	9	2	13%	-	50%	13%	-	33%	10%	-	50%
Psychology	-	4	2	7	8	-	-	33%	100%	14%	33%	100%	14%	36%	50%
Statistics	-	1	1	7	3	1	-	25%	50%	-	-	50%	-	20%	50%

Table 1 continued: Other Faculty

	Women			Men			% Women Fall 2005 Within Rank			% Women Fall 2004 Within Rank			% Women Fall 2003 Within Rank		
	A/P	Inst	Res	A/P	Inst	Res	A/P	Inst	Res	A/P	Inst	Res	A/P	Inst	Res
College of Engineering	**7**	**5**	**12**	**6**	**9**	**75**	**54%**	**36%**	**14%**	**53%**	**32%**	**15%**	**43%**	**52%**	**18%**
Aerospace & Ocean Eng	-	-	2	-	-	6	-	-	25%	-	-	-	-	-	-
COE Northern Virginia	-	-	1	1	1	2	-	-	33%	-	-	-	-	-	-
Chemical Engineering	-	-	-	-	-	5	-	-	-	-	-	20%	-	-	25%
Civil & Env. Engineering	-	1	1	-	-	8	-	100%	11%	-	50%	25%	-	50%	31%
Computer Science	-	2	-	-	3	3	-	40%	-	-	40%	-	-	40%	-
Dean – Engineering	6	-	2	5	1	8	55%	-	20%	60%	-	30%	43%	75%	-
Electrical Engineering	1	1	1	-	2	9	100%	33%	10%	100%	33%	8%	-	50%	10%
Eng. Fundamentals	-	-	-	-	-	1	-	-	-	-	50%	-	-	50%	100%
Eng. Sci. & Mechanics	-	-	1	-	1	7	-	-	13%	-	-	-	-	-	-
Industrial & Systems Eng.	-	-	1	-	-	14	-	-	7%	-	-	6%	-	-	-
Materials Engineering	-	1	2	-	1	4	-	50%	33%	-	50%	40%	-	100%	40%
Mechanical Engineering	-	-	1	-	-	6	-	-	14%	-	-	20%	-	-	25%
Mining & Minerals Eng.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Ctr for Intell. Mat.-CIMSS	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	17%
College of Science	**2**	**21**	**13**	**2**	**22**	**49**	**50%**	**49%**	**21%**	**50%**	**52%**	**23%**	**0%**	**56%**	**25%**
Biology	-	1	6	-	2	12	-	33%	33%	-	33%	33%	-	20%	50%
Chemistry	-	3	2	-	4	17	-	43%	11%	-	67%	22%	-	57%	20%
Dean of Science	2	-	-	2	-	-	50%	-	-	50%	-	-	-	-	-
Economics	-	-	-	-	2	-	-	-	-	-	20%	-	-	50%	-
Geosciences	-	-	2	-	1	7	-	-	22%	-	-	11%	-	50%	20%
Mathematics	-	15	-	-	8	1	-	65%	-	-	71%	-	-	71%	-
Physics	-	-	-	-	1	11	-	-	-	-	-	-	-	-	-
Psychology	-	-	2	-	2	1	-	-	67%	-	-	75%	-	-	75%
Statistics	-	2	1	-	2	-	-	50%	100%	-	33%	50%	-	50%	50%

A/P=Administrative & Professional Faculty; Inst=Non-Tenure-Track Instructional Faculty; Res=Research Faculty

Note: The “COE Northern Virginia” is a satellite office for the College of Engineering and is not considered a separate department. Nor is the Biomedical Engineering program a traditional department. Traditional departments, responsible for tenure decisions, for each center are based on the Virginia Tech, Blacksburg campus.

Source: Coll of Eng_fa98-05.xls, Coll of Sci_fa98-05.xls, R. Giles

Table 2. Tenure and/or Promotion Only Review Outcomes by Gender

Promotion and/or Tenure Review Outcomes by Gender: Assistant to Associate Professor						
	# of Reviews		# of Approvals		# of Denials	
	Women	Men	Women	Men	Women	Men
2002-2003						
College of Engineering	3	8	3	7	-	1
College of Science	-	7	-	7	-	-
2003-2004						
College of Engineering	2	10	2	8	-	2
College of Science	2	5	2	5	-	-
2004-2005						
College of Engineering	3	7	3	7	-	-
College of Science	1	5	1	5	-	-
2005-2006						
College of Engineering	1	15	1	13	-	2
College of Science	-	2	-	2	-	-

Promotion and/or Tenure Review Outcomes by Gender: Associate to Professor						
	# of Reviews		# of Approvals		# of Denials	
	Women	Men	Women	Men	Women	Men
2002-2003						
College of Engineering	2	10	2	10	-	-
College of Science	-	5	-	5	-	-
2003-2004						
College of Engineering	-	7	-	7	-	-
College of Science	-	2	-	2	-	-
2004-2005						
College of Engineering	3	3	3	3	-	-
College of Science	2	5	2	3	-	2
2005-2006						
College of Engineering	-	9	-	9	-	-
College of Science	1	6	1	5	-	1

Notes: Faculty hired at the rank of associate professor, but without tenure, who are then considered for tenure are included in the upper table. Faculty hired at the professor level, but without tenure, who are then considered for tenure, are included in the lower table. Data provided by S. Karlin as of June 2006.

Table 3: Tenure and Promotion Outcomes as of May 2006, New Assistant Professor Cohorts 1996-2004

College of Science Year Hired	# in Cohort		Promoted to Associate		Average Time to Promotion (years)		Left Institution		Not Yet Tenured	
	F	M	F	M	F	M	F	M	F	M
1996/97	2	6	2	4	6.5	5.3	-	2	-	-
1997/98	1	5	1	5	6.0	5.0	-	-	-	-
1998/99	1	8	1	6	6.0	4.8	-	2	-	-
1999/00	1	3	-	1	-	5.0	1	2	-	-
2000/01	3	2	-	-	-	-	2	-	1	2
2001/02	-	4	-	-	-	-	-	-	-	4
2002/03	2	1	-	-	-	-	-	-	2	1
2003/04	2	3	-	-	-	-	-	-	2	3
Total Number of New Hires ('96-'04)	12	32	4	16	--	--	3	6	5	10
College Total Percentage ('96-'04)	27%	73%	33%	50%	--	--	25%	19%	42%	31%
College Average Time to Tenure					6.1	5.0				

College of Engineering Year Hired	# in Cohort		Promoted to Associate		Average Time to Promotion (years)		Left Institution		Not Yet Tenured	
	F	M	F	M	F	M	F	M	F	M
1996/97	4	6	2	4	6.8	4.6	1	2	1	-
1997/98	2	8	1	6	6.0	5.7	1	2	-	-
1998/99	6	9	4	6	4.3	5.6	1	1	1	2
1999/00	1	8	-	2	-	3.3	-	1	1	5
2000/01	-	11	-	-	-	-	-	3	-	8
2001/02	1	8	-	-	-	-	-	-	1	8
2002/03	2	4	-	-	-	-	-	-	2	4
2003/04	4	6	-	-	-	-	-	-	4	6
Total Number of New Hires ('96-'04)	20	60	7	18	--	--	3	9	10	33
College Total Percentage (96-'04)	25%	75%	35%	30%	--	--	15%	15%	50%	55%
College Average Time to Tenure					4.5	4.8				

Note: Percentages are within cohort/sex, except for the column '# in Cohort;' these are percents male and female of total incoming cohort.

Source: data source advance_asstprofs_9697to05.html plus each additional year; number in cohort may not match number of new hires due to changes of status

Table 4: Promotion to Professor

Table 4a: Years in Rank at the Associate Professor Level for COE and COS Faculty Hired as Assistant Professors, 1996/97-2000/01

	College of Engineering				College of Science			
Number Hired	**Women N=13**		**Men N=42**		**Women N=8**		**Men N=24**	
Number Promoted	**Women N=7**		**Men N=18**		**Women N=4**		**Men N=16**	
Years in Rank	**Number**	**% of Women**	**Number**	**% of Men**	**Number**	**% of Women**	**Number**	**% of Men**
0-2	1*	8%	-	-	-	-	1	4%
3-5	-	-	7	17%	-	-	11	46%
6-8	6	46%	11	26%	4	50%	4	17%
9-11	-	-	-	-	-	-	-	-
12-14	-	-	-	-	-	-	-	-
15 or more	-	-	-	-	-	-	-	-

Table 4b: Years in Rank at the Associate Professor Level for COE and COS Faculty Hired as Associate Professors, 1996/97-2000/01

	College of Engineering				College of Science			
Number Hired	**Women N= 2**		**Men N=20**		**Women N=4**		**Men N=8**	
Number Promoted	**Women N= 0**		**Men N=6**		**Women N=0**		**Men N=2**	
Years in Rank	**Number**	**% of Women**	**Number**	**% of Men**	**Number**	**% of Women**	**Number**	**% of Men**
0-2	-	-	-	-	-	-	-	-
3-5	-	-	6	30%	-	-	2	25%
6-8	-	-	-	-	-	-	-	-
9-11	-	-	-	-	-	-	-	-
12-14	-	-	-	-	-	-	-	-
15 or more	-	-	-	-	-	-	-	-

Source: Removed any departing faculty, data source advance_assocprofs_9697to05.html plus each additional year for cohorts; advance_asstprofs_9697to05.html plus each additional year

*One female faculty member promoted from Assistant to full Professor in 1.6 years.

%=% of men or women hired at that rank during the time period

Table 5: Average Time at Institution by College, Rank, and Gender
Virginia Tech Tenure-Track Faculty
Fall 2005

College of Engineering

Rank	Gender				Total N
	M		F		
	N	Average Years	N	Average Years	
Professor	127	18.5	8	11.3	135
Associate Professor	88	11.0	15	6.2	103
Assistant Professor	48	2.8	16	2.0	64
Total	**263**	**13.3**	**39**	**5.8**	**302**

College of Science

Rank	Gender				Total N
	M		F		
	N	Average Years	N	Average Years	
Professor	101	23.5	8	18.8	109
Associate Professor	50	14.9	12	9.0	62
Assistant Professor	10	2.1	10	1.0	20
Total	**161**	**19.5**	**30**	**9.0**	**191**

University Total

Rank	Gender				Total N
	M		F		
	N	Average Years	N	Average Years	
Professor	505	21.3	73	18.0	578
Associate Professor	336	13.5	128	11.1	464
Assistant Professor	158	3.0	107	2.6	265
Instructor	1	21.2	-	-	1
Total	**1000**	**15.8**	**308**	**9.8**	**1308**

Source: advance_time_at_vt_032906.sas, Tenured and Tenure-Track Faculty only
(Defined as Tenure Codes T, P, C, and E) and Academic Colleges only
Census date, September 30, 2005

Table 6. Voluntary, Non-Retirement Attrition, by Rank and Gender, 1997-2005

	Assistant		Associate		Professor		Total Attrition	
	Women	Men	Women	Men	Women	Men	Women	Men
1997-1998								
College of Engineering	-	1	-	-	-	2	-	3
College of Science	-	3	-	-	-	-	-	3
1998-1999								
College of Engineering	-	1	-	-	1	2	1	3
College of Science	1	3	1	1	-	-	2	4
1999-2000								
College of Engineering	-	1	-	4	-	3	-	8
College of Science	-	-	-	1	-	3	-	4
2000-2001								
College of Engineering	2	2	-	2	-	2	2	6
College of Science	-	3	-	-	-	1	-	4
2001-2002								
College of Engineering	-	1	-	1	-	1	-	3
College of Science	-	-	1	2	-	1	1	3
2002-2003								
College of Engineering	1	-	1	-	-	3	2	3
College of Science	1	-	-	-	-	-	1	-
2003-2004								
College of Engineering	-	4	-	2	-	5	-	11
College of Science	2	1	-	1	1	-	3	2
2004-2005								
College of Engineering	-	2	-	1	-	3	-	6
College of Science	1	-	1	-	-	-	2	-

Source: September 30, 2005 census date, includes tenured and tenure track faculty who have departed, excludes any faculty who retired; departures_official_070605_advance.sas and departures_detail_involuntary_24mar06.pdf

Table 7. Faculty Leadership Positions

2003-2004 Academic Year by College

	All Faculty	Number of Women										
		Total	% Women	Univ. Admin.	CALS	CAUS	COB	COE	COS	LAHS	NR	VM
Full Professors*	575	65	11%	-	9	4	4	4	10	30	-	4
Dept. Heads	67	9	13%	-	1	1	-	-	-	6	-	1
Academic Deans	8	1	13%	-	1	-	-	-	-	-	-	-
Assoc. Deans	26	7	27%	-	-	-	1	2	2	2		
University Center Directors	20	3	15%	-	-	-	-	-	-	3	-	-
President, VPs, Provost, Vice-Provosts	13	2	15%	2	-	-	-	-	-	-	-	-
University Promotion & Tenure Committees	9	5	56%	-	-	1	-	-	1	2	-	1
University Distinguished Professors	13	1	8%	-	-	-	-	-	-	1	-	-
Alumni Distinguished Professors	9	3	33%	-	-	-	-	-	-	3	-	-
Eminent Scholars	100	3	3%	-	-	-	-	-	1	2	-	-

2004-2005 Academic Year by College

	All Faculty	Number of Women										
		Total	% Women	Univ. Admin	CALS	CAUS	COB	COE	COS	LAHS	NR	VM
Full Professors*	572	65	11%	-	10	4	4	5	8	30	-	4
Dept. Heads	68	8	12%	-	1	-	-	-	-	6	-	1
Academic Deans	8	1	13%	-	1	-	-	-	-	-	-	-
Assoc. Deans	26	8	31%	1	-	-	1	2	2	2	-	-
University Center Directors	20	2	10%	-	1	1	-	-	-	1	-	-
President, VPs, Provost, Vice-Provosts	14	2	14%	2	-	-	-	-	-	-	-	-
University Promotion & Tenure Committees**	9	5	56%	-	-	-	1	-	1	1	-	1
University Distinguished Professors	13	1	8%	-	-	-	-	-	-	1	-	-
Alumni Distinguished Professors	11	3	27%	-	-	-	-	-	-	3	-	-
Eminent Scholars	101	3	3%	-	-	-	-	-	1	2	-	-

Table 7. Faculty Leadership Positions, continued

2005-2006 Academic Year by College

	All Faculty	Number of Women									
		Total	% Women	Univ. Admin	CALS	CAUS	COB	COE	COS	LAHS	NR	VM
Full Professors*	588	74	13%	-	11	4	5	8	8	33	-	4
Dept. Heads	64	9	14%	-	2	-	-	-	-	6	-	1
Academic Deans	8	1	13%	-	1	-	-	-	-	-	-	-
Assoc. Deans	28	7	25%	1	-	-	1	1	2	2	-	-
University Center Directors	19	3	16%	2	1	-	-	-	-	1	-	-
President, VPs, Provost, Vice-Provosts	14	3	21%	2	-	-	-	-	-	-	-	-
University Promotion & Tenure Committees**	9	4	44%	-	-	-	1	-	1	1	-	1
University Distinguished Professors	13	1	8%	-	-	-	-	-	-	1	-	-
Alumni Distinguished Professors	11	3	27%	-	-	-	-	-	-	3	-	-
Eminent Scholars	106	4	4%	-	-	-	-	1	1	2	-	-

College Abbreviations: CALS (College of Agriculture and Life Sciences), CAUS (College of Architecture and Urban Studies), COB (College of Business), COE (College of Engineering), COS (College of Science), LAHS (College of Liberal Arts and Human Sciences), NR (College of Natural Resources), VM (College of Veterinary Medicine)
Source: S. Karlin's files on ADPs, UDPS, Eminent Scholar listings, DDD list, IR data for full professors
* September census date used, other rows represent June data, 65 total excludes any found among university administration
** Includes faculty member participants only, including faculty member-at-large

Table 8. Virginia Tech Promotion and Tenure Committees

Departmental Committees by Gender for 2003-2006

College of Engineering	Departmental Committee 2003-2004					Departmental Committee 2004-2005					Departmental Committee 2005-2006				
	F		M		All	F		M		All	F		M		All
	#	%	#	%	#	#	%	#	%	#	#	%	#	%	#
Aerospace and Ocean Engineering	0	0	8	100%	8	0	0	9	100%	9	0	0	9	100%	9
Chemical Engineering	0	0	4	100%	4	0	0	4	100%	4	0	0	4	100%	4
Civil & Environmental Engineering	0	0	6	100%	6	1	17%	5	83%	6	1	17%	5	83%	6
Computer Science	0	0	4	100%	4	0	0	6	100%	6	0	0	7	100%	7
Electrical Engineering	0	0	8	100%	8	1	10%	9	90%	10	1	17%	5	83%	6
Engineering Education	0	0	5	100%	5	1	20%	4	80%	5	2	40%	3	60%	5
Engineering Science & Mechanics	0	0	7	100%	7	0	0	7	100%	7	0	0	6	100%	6
Industrial & Systems Engineering	3	16%	16	84%	19	2	12%	15	88%	17	3	19%	13	81%	16
Material Sciences & Engineering	1	11%	8	89%	9	1	20%	4	80%	5	1	20%	4	80%	5
Mechanical Engineering	2	20%	8	80%	10	3	30%	7	70%	10	2	20%	8	80%	10
Mining & Minerals Engineering	0	0	4	100%	4	0	0	5	100%	5	0	0	5	100%	5
College Total	**6**	**7%**	78	93%	84	**9**	**11%**	75	89%	84	**10**	**13%**	69	87%	79

College of Science	Departmental Committee 2003-2004					Departmental Committee 2004-2005					Departmental Committee 2005-2006				
	F		M		All	F		M		All	F		M		All
	#	%	#	%	#	#	%	#	%	#	#	%	#	%	#
Biological Sciences	2	25%	6	75	8	3	33 %	6	67%	9	2	22%	7	78%	9
Chemistry	0	-	7	100	7	0	-	5	100%	5	0	-	7	100%	7
Economics	0	-	4	100	4	0	-	4	100%	4	1	20%	4	80%	5
Geosciences	2	33.3%	4	66.7	6	1	17%	5	83%	6	1	20%	4	80%	5
Mathematics	0	-	8	100	8	1	14%	6	86%	7	0		7	100%	7
Physics	1	13%	7	87.5	8	0	-	5	100%	5	1	17%	5	83%	6
Psychology	3	50%	3	50	6	3	50%	3	50%	6	2	33%	4	67%	6
Statistics	0	-	4	100	4	0	-	4	100%	4	0	-	4	100%	4
College Total	**8**	**16%**	43	84%	51	**8**	**17%**	38	83%	46	**7**	**14%**	42	86%	49

Table 8. Virginia Tech Promotion and Tenure Committees, continued

College-Level P&T Committees

	College Committees 2003-2004					College Committees 2004-2005					College Committees 2005-2006				
	F		M		All	F		M		All	F		M		All
	#	%	#	%	#	#	%	#	%	#	#	%	#	%	#
Engineering	1	4%	22	95%	23	1	4%	22	95%	23	3	12%	22	88%	25
Science	3	33.3%	6	66%	9	1	11%	8	88%	9	3	33%	6	67%	9
Total	**4**	**12%**	28	87%	32	**2**	**6%**	30	94%	32	**4**	**13%**	28	88%	32

Source: Data provided by respective colleges

Table 9. New-Hires in College of Engineering and College of Science 1997-2005

	Total New Female Hires	Total New Hires	Assistant			Associate			Full		
			Men	Women	% W	Men	Women	% W	Men	Women	% W
Fall 1998											
Engineering	**2**	20	12	2	**14%**	1	-	**0%**	5	-	**0%**
Science	**2**	11	5	1	**17%**	2	1	**33%**	2	-	**0%**
Fall 1999											
Engineering	**6**	23	9	6	**40%**	6	-	**0%**	2	-	**0%**
Science	**1**	11	8	1	**11%**	1	-	**0%**	1	-	**0%**
Fall 2000											
Engineering	**2**	15	9	1	**10%**	2	1	**33%**	2	-	**0%**
Science	**4**	13	3	1	**25%**	3	2	**40%**	3	1	**25%**
Fall 2001											
Engineering	**0**	20	9	-	**0%**	7	-	**0%**	4	-	**0%**
Science	**4**	10	2	3	**60%**	4	1	**20%**	-	-	**0%**
Fall 2002											
Engineering	**3**	11	8	1	**11%**	2	-	**0%**	-	-	**0%**
Science	**0**	4	4	-	**0%**	-	-	**0%**	-	-	**0%**
Fall 2003											
Engineering	**6**	19	10	4	**29%**	3	2	**40%**	-	-	**0%**
Science	**1**	2	1	1	**50%**	-	-	**0%**	-	-	**0%**
Fall 2004											
Engineering	**7**	21	7	4	**36%**	2	2	**50%**	5	1	**17%**
Science	**2**	6	3	2	**40%**	-	-	**0%**	1	-	**0%**
Fall 2005											
Engineering	**7**	29	9	5	**36%**	8	1	**11%**	5	1	**17%**
Science	**5**	8	1	4	**80%**	-	1	**100%**	2	-	**0%**

Source: Data from bov_newhires_S08_24MAR06. Census date of March 24, 2006.

AdvanceVT Seed Grant Update
Maura Borrego, Engineering Education
May 1, 2006

In the year since my *AdvanceVT* seed grant was awarded, I have developed mentoring and collaborative relationships, collected key data, and laid a foundation of emerging expertise. The most important thing the seed grant did for me was to give me the confidence to contact potential mentors and collaborators outside Virginia Tech. I made a few contacts in developing my proposal, but the vote of confidence that the award represents really made me feel like someone as new to the field as I am really does have something to contribute.

Most importantly, I connected to the NSF-funded *Conducting Rigorous Research in Engineering Education* workshop program. In summer 2005, I attended as an observer and developed a model for engineering faculty learning educational research methods. Last month, I submitted a single-author publication detailing this model. For 2006, I have been named the program evaluator for this high-profile engineering education project.

A second project was a more historical look at how the Engineering Education Coalitions, a multimillion dollar NSF funding initiative, contributed to the development of engineering education as a discipline. For this project, I interviewed the leaders of these coalitions, which also helped make them aware of my work. A journal article is under preliminary review now. The expertise developed during this project helped me win a competitive invitation to the *Social Dynamics of Campus Change* meeting at the National Academies this April. Only nine engineers were invited to this event, which was designed to help engineers and sociologists define research agendas and form collaborations. My working group plans on submitting an NSF proposal this August.

The third major project is on collaboration styles across technical and nontechnical disciplines. Last spring, I conducted a pilot study of 7 faculty, which will be presented as a conference paper this October. Based on their responses, I developed a national survey that was just completed by 200 NSF PIs. This summer, I intend to analyze the results and publish them with the help of Elizabeth Creamer.

I've been to NSF about six times to visit with program officers. I see my work this past year as supporting proposals I have written and plan to submit in the near future (as PI or Co-PI):

1. Collaborative Research: Assessing the Long-Term Effects of Information Dissemination via a Summer Workshop (PI), NSF EREC, 4/2005
2. Investigation of the Ability of a Workshop to Encourage Widespread Application of Engineering Education Research Results (PI), NSF EEP, 8/2005
3. SGER: Facilitating Effective Communication in Interdisciplinary Design Teams (Co-PI), NSF EMI-Design, 1/2006
4. International Collaboration between Virginia Tech and Blekinge Institute of Technology: Engineering Design and the Impacts of Technology in Society (Co-PI), NSF IRES, 2/2006
5. Systematic Investigation of ATE Center Dissemination of Resources and Reforms to Faculty at 2-Year Colleges (PI), NSF ATE, 4/2006

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April 20th 2006

Spin Dependent Phenomena in Narrow Gap Semiconductors, supported by the Advance VT
PI: Giti Khodaparast, Department of Physics, Virginia Tech.

Part of my research activities at Virginia Tech. have been focused on establishing a magneto-optical and time-resolved laser spectroscopy laboratory to probe quantum states of low dimensional narrow gap semiconductor systems, such as InSb heterostructures and ferromagnetic structures. Magneto-optical spectroscopy of semiconductors can provide invaluable information about band structure, carrier states, phonons, and spins. Better understanding of the quantum states and dynamics of carriers can help to develop new devices as well as elucidate many interesting physical concepts. Two female graduate students have been involved in this project, Kanokwan Nontapot and Aliya Gifford (Aliya was partially supported by the Advance VT). Recently, Kanokwan gave a presentation at the APS March meeting in Baltimore related to our recent experimental observations, we are expecting to have several publications soon.

The funding from the Advance program has been a great help to support one of my graduate students and purchasing parts/supplies to establish my lab. I have submitted a proposal to the National Science Foundation (NSF) on a similar topic in 2004 and was funded by the NSF division of material research in 2005. This proposal falls into the broad area of nanoscience, which has been identified as having high priority at the national, state and university level. Both the College of Science and the College of Engineering are firmly committed to strengthening research in this area. I plan to continue my research and educational activities to pursue the proposed activities in my proposals (includes: increased understanding of laser interactions with the semiconductor structures; establishment of the spin dynamics such as relaxation and decoherence mechanisms; and developing concepts for optimized spin based devices) and to increase our students' knowledge and expertise in different aspects of modern experimental techniques.

Giti Khodaparast

G. D. Khodaparast

Assistant Professor of Physics

AdvanceVT Research Seed Grant Summary
Leigh McCue, Aerospace and Ocean Engineering

1. What have you done this year? Accomplishments, etc…
With support from *AdvanceVT* along with department and college matching funds, I was able to recruit and support a highly talented PhD student, Wan Wu. Ms. Wu arrived at Tech having already completed her MS at Shanghai Jiao Tong University, one of the strongest Naval Architecture programs in the world. The funding from *AdvanceVT* allowed for a year of familiarization with prior literature on Melnikov's method for the capsize problem and provided the framework for the original contributions to the field that Ms. Wu is now formulating under my guidance. Additionally, support from *AdvanceVT*, with corresponding matching, allowed for growth to my computational resources and travel to numerous conferences/workshops.

AdvanceVT was acknowledged in the following works:

- McCue, L.S. and Bulian, G., "A numerical feasibility study of a parametric roll advance warning system," Accepted for the 25th International Conference on Offshore Mechanics and Arctic Engineering (OMAE 2006), Hamburg, Germany, June, 2006.
- McCue, L.S. and Bassler, C., "An alternative quiescence detection method for sea-based aviation operations," ASNE's Launch and Recovery of Manned and Unmanned Vehicles from Surface Platforms: Current and Future Trends Symposium, Annapolis, MD, November 2005.
- McCue, L., Bassler, C., and Belknap, W., "Real-time identification of behavior leading to capsize," Abstract accepted, paper submitted for the 9th International Conference on Stability of Ships and Ocean Vehicles (STAB 2006), Rio de Janeiro, Brazil, September, 2006.
- "Apples to apples or apples to oranges? Capsize experimentation, numerical simulation, and detection," Navatek, Ltd., Honolulu, Hawaii, March, 2006.
- "Can we predict capsize, (and if not, is our approach wrong)?" HydroColloquium, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, December, 2005.

2. Have you submitted proposals?
In 2005, I submitted an unsuccessful proposal to the NSF CAREER program. The CAREER proposal received overall positive reviews, but was not supported. Useful feedback from the CAREER program was incorporated into an ONR proposal which, it is my understanding, is likely to be funded. Additionally, I have submitted a handful of smaller proposals directly or indirectly to the Navy. These proposed efforts largely stemmed from my time spent last summer, and this coming summer, as a participant in the ASEE/ONR Summer Faculty Program at the Naval Surface Warfare Center, Carderock Division. Lastly, I have one small pending proposal (status: 'recommended') submitted to NSF to support conference travel.

3. Where do you plan to submit proposals if you have not done so yet?
N/A

4. What future activities will the work you have conducted under the grant support?
The work conducted this year will support future proposals to NSF, including a revised NSF CAREER proposal, and publications with Ms. Wu produced directly from her thesis research. I anticipate within the next year a minimum of one journal paper and one workshop paper (abstract submitted with Ms. Wu) will be submitted/presented as a result of research funded by *AdvanceVT*.

***AdvanceVT* seed grant report**
Madeline Schreiber, Geosciences

1. What you have done this year? Accomplishments, etc.

This year, my group and I have been investigating the use of nanoscience tools to examine how arsenic is partitioned to solids. Our first experiment on comparing pH-dependence of inorganic and organic arsenic on two minerals (goethite and kaolinite) is complete (M.S. work of Mary Harvey). We are planning to use synchrotron-based XANES (X-ray adsorption near-edge structure spectroscopy) and extended X-ray absorption fine structure spectroscopy (EXAFS) to learn more about binding mechanisms of organic vs. inorganic arsenic adsorption. I have submitted a proposal to the Advanced Photon Source at Argonne National Lab to use EXAFS; we will hear on April 27 if we have been approved for beamtime this summer. If the proposal is not approved, we can re-submit and hope to get scheduled beamtime next fall. The second experiment on extracting arsenic from different mineral phases in arsenic-contaminated mine soils has also been recently completed (M.S. work of Ankan Basu). The chemical extractions gave us general information about the solid phases to which arsenic is incorporated (amorphous iron oxides, crystalline iron oxides, carbonates, etc.) We are planning to use TEM (transmission electron microscopy) to examine in more detail which solid phases contain arsenic. The TEM was purchased last fall and it is currently being set up by Joerg Jinschek, our recently-hired TEM scientist, but it will not be in operation until May-June.

2. Have you submitted proposals?

Because we have not gotten access to the nanoscience tools yet, I have not been able to collect the nanoscience data to complement the experimental results. Once I have collected the data, I will be able to submit a proposal, likely for the Dec 1 NSF Hydrologic Sciences or Jan 16 NSF Geobiology and Low Temperature Geochemistry deadlines.

3. Where do you plan to submit proposals if you have not done so yet?

See above.

4. What future activities will the work you have conducted under the grant support?

The data we collect should get our “foot in the door” in the niche area of nanoscale chemical hydrogeology, which will broaden our funding arenas and publication venues. I also expect that this niche area will attract more and better graduate students to my program, and enhance interdisciplinary collaboration with scientists from Virginia Tech and elsewhere.

Project Summary - 2005 *AdvanceVT* Research Development Grants
Tess Wynn, Biological Systems Engineering

Development of a Continuous Suspended Sediment Sensor for Water Quality Monitoring

My long term vision is to develop a leading research program in stream restoration at Virginia Tech. As part of my research program I have a goal of developing a suspended sediment sensor for continuous water quality monitoring. A key component of stream physical stability and ecological health is stream sediment concentration and transport. Current sediment sampling techniques provide poor temporal resolution, are laborious and expensive, and produce significant error; therefore, sensor development for continuous suspended sediment monitoring in streams is critical for conducting field research on watershed, water quality, and stream management.

The overall goal of this project was to develop a successful National Science Foundation (NSF) CAREER proposal on stream restoration. Because sediment transport is a key determinant in stream form and function, a significant focus of the proposal will be the development of sensors for continuous suspended and bedload sediment monitoring in streams. The project goal was addressed by establishing collaborations with scientists at the USDA ARS Sedimentation Laboratory; conducting a literature review of current sediment sensor research; and conducting preliminary laboratory experiments.

Over the past year, I worked to establish a research program in stream restoration. I have been building both indoor and field laboratory facilities. Colleagues and I secured major funding from the university to purchase a 1-m wide sediment flume ($141,575) and a ground-based LiDAR system ($79,840). An outdoor research laboratory was established along Stroubles Creek just downstream of campus. Four optical backscatter sensors (OBS), 250 erosion pins, seven scour chains, two sampling bridges, a stream gage, and a network of raingages were installed within the Stroubles Creek watershed. This field laboratory is currently supporting the research of six graduate students.

In April 2005 I met with Dr. Roger Kuhnle with the US Department of Agriculture, Agricultural Research Service, Sedimentation Lab and Dr. James Chambers with the National Center for Physical Acoustics (NCPA) in Oxford, Mississippi. I toured their laboratory facilities and saw the field deployment of their acoustic sediment sensor. As a result of this visit, a research collaboration was formed; I will be testing their acoustic sediment sensor with the standard OBS and the sensor we are currently developing.

During the summer of 2005 I recruited an outstanding undergraduate woman (Cami Johnson, the Barry Goldwater Scholarship candidate for the University of Idaho) to conduct a detailed literature review on the underlying science, equipment, and analytical techniques for continuous monitoring of suspended sediment. This review indicated that acoustic technologies have been extensively explored for sediment monitoring and led to a different process, soil capacitance, for future development. Additionally, this work helped recruit Ms. Johnson as a graduate student in my research program. She will be starting as an MS student in fall 2006.

The *AdvanceVT* grant also assisted with the recruitment of a talented PhD student, Ms. Barbra Crompton. Ms. Crompton started in fall 2005 and has been conducting preliminary laboratory experiments with four capacitance probes. If these initial experiments are successful, the most promising probe will be deployed in the field in conjunction with the OBS sensors and standard sediment sampling. Due to the birth of my second child and an extended illness, this

laboratory work was delayed until spring 2006. The research is ongoing and will hopefully provide initial data that will support an NSF proposal for sensor development.

Due to personal constraints, I submitted just two proposals over the past year. One proposal was submitted to the US Environmental Protection Agency on using remote sensing for estimating streambank erosion rates. This proposal was not funded because the entire program was cut due to lack of funding. A second proposal on innovative stormwater management techniques was submitted to the Virginia Department of Conservation and Recreation. This proposal has been approved for funding, following a 30-day public comment period.

This summer I plan on submitting a CAREER proposal to NSF. I will continue investigations in the use of capacitance probes for measuring sediment concentration and particle size distribution. If successful, these probes will be compared to standard OBS and NCPA's acoustic sensor in both flume and field trials. The funding received from this grant has provided a foundation in a new field of study for me and has contributed to the establishment of a long term field monitoring program. Future research topics will include a comparison of stream restoration techniques for streambank stabilization and aquatic habitat improvement and evaluation of the water quality impact of riparian wetland restoration.

2004-2005 *AdvanceVT* Leadership Development Program
Assessment Report

Interviews were completed with seven women who participated in the *AdvanceVT* Leadership Development Program in 2005-06. The interviews were conducted between January 23 and February 15, 2006. Four participants were interviewed in person and three over the telephone, according to the interviewee's preference. Each interviewee signed an informed consent form. The interviewer compiled field notes at the completion of each interview, and the field notes were sent to each participant for their review. The participants made very few changes to the field notes, attesting to the quality of the data.

The following is a summary of the responses to the interview questions. Summaries are reported in the form of "majority" responses, meaning most of the participants noted this idea, and "minority" responses, meaning at least one individual expressed this idea.

Question #1: What motivated you to participate in the *AdvanceVT* Leadership Program?
Majority report:

- Personal interest in future leadership roles
- Interest in building on leadership skills and abilities (conflict management, motivating people, negotiation, operational aspects, i.e. budgeting)
- To gain a better understanding of the responsibilities that coincide with a leadership role
- Understanding the climate at Virginia Tech and how to negotiate a position within this climate

Quote: "I thought it would be a wonderful opportunity to further develop my leadership skills.'"

Minority report:

- Meeting other women faculty who are interested in leadership roles
- Networking
- Learning from those that have had leadership experience
- Interest in examining own personal strengths and weaknesses

Question #2: What types of skills did you hope to acquire by participating in the program?
Majority report:

- Managing people (conflict management, how to motivate people)
- Skills involved in management responsibilities (i.e. budgeting)
- Time management and organizational skills (when and how to say "no")
- Negotiation
- Gaining a better understanding of leadership at Virginia Tech

Quote: "I was interested in getting a detailed understanding of how leadership works at Virginia Tech."

Question #3: On a scare of 0-10, with 10 meaning "exceeded your expectations" and 0 meaning "it fell short of your expectations," to what extent would you say the program has met your expectations?

- Two participants rated the program "3." These participants indicated why they rated the program low:
  - The program did not provide enough "expert knowledge" and time for discussion with people currently in leadership roles.
  - There were not enough opportunities for interaction with cohort.
  - There was not much information about the leadership culture at Virginia Tech.
- Two participants rated the program "6." These participants had both positive and negative things to say about the program.
  - How met or exceeded expectations:
    - Interaction with successful department heads
    - Assessment and feedback
    - Workshops
    - Deans and department head panel
  - How fell short in meeting expectations:
    - Operational information (i.e. budgets)
    - Not enough information on time management
    - Not enough information about applying for, interviewing for, and negotiating for leadership positions
    - Lack of connection and activities with cohort
    - Workshops did not necessarily provide the discussion that was necessary to really learn the details of leaders' roles and responsibilities
    - Need more "hands-on" activities in learning about negotiation and conflict management
- The other three participants rated the program "8," "9," and "10." Here is a summary of their responses:
  - The program met expectations, but did not necessarily meet personal goals
  - Impressed with the dedication of the people running the program
  - The networking opportunities assisted in future endeavors
  - The friendships that developed were especially important

Quote: "Everything that was done was good, but there should have been more."

Question #4: In what ways has the program influenced your goals for leadership positions in the future?

Majority report:

- All but one participant indicated that the program influenced her interest in leadership positions in the future in a positive way.
- Participants voiced that their participation assisted them in the development of a more "solidified commitment" to a future leadership role.
- Almost all of the participants stated that as a result of the *AdvanceVT* Leadership Development Program they felt a personal recognition and confidence that they were able to succeed in a leadership role.

Minority report:

- Understanding of the positive and negative aspects of "leap frogging" into leadership roles
- An understanding of what things can be negotiated

- One individual indicated that her goals have changed, but she did not attribute her goals to her participation in the leadership development program.

Quote: "I was able to talk through my strengths and weaknesses and realize that I had the characteristics that would allow me to do well in a leadership position."

Question #5: What part of the leadership program have you found to be most personally valuable?
Majority report (almost all of the participants noted both of these experiences as most valuable):
- The one-on-one meetings and skills scope exercise (enabled to look at self critically)
- Cohort interaction

Quote: "The one-on-one sessions allowed me to really look at myself from another perspective and reviewing the results with another person facilitated a more in-depth reflection. I was able to see others' perspectives of my skills and action and what that might mean for me in relation to my leadership skills."

Minority report:
- Networking opportunities
- Meeting with those in leadership position and getting their thoughts on their role
- Negotiation skills

Question #6: What part of the leadership program has been least valuable or useful to you personally?
Three participants could not identify any aspect that they felt was least useful or valuable. The others indicated (all minority reports):
- The one-on-one meetings
- The lack of available resources (like books)
- Not gaining a better understanding of the leadership climate at Virginia Tech
- More focus on how to counter-act leadership climate for women
- Time demands influenced how much time that could be put into the program

Question #7: Can you identify any tangible outcomes to your own career that you attribute in whole or part to your participation in the leadership program?
One participant stated that she can not identify any tangible outcomes and three others said it was too soon to tell. Other responses included:
- Confidence
- Applying for or acceptance of leadership positions.

Quote: "The program has prepared me to pursue positions and I have started to look. I feel like I am coming from a place of strength in pursuing a leadership position."

Question #8: If you had to do it all over again would you participate in the program?
Six of the seven participants stated "yes," one participant stated "no."

Question #9: What advice would you offer other VT women who are considering participating in the program?

All minority report:

- The local aspect of the program is helpful.
- Might advise other leadership programs.
- It is important entering the program to "target a well-defined leadership goal."
- The time commitment is significant and requires scheduling in time to devote to program.
- The program is a good overview for people interested in a leadership role.
- Participate in as much as possible, "all opportunities are wonderful."

Question #10: Do you have any suggestions about ways that program can be improved?

Majority report:

- Expert led activities and examples on how to do certain skills
- More interaction with cohort
- More interactions with those in leadership roles (including opportunity to ask questions)

Quote: "Another cohort member took it upon herself to create a monthly luncheon for the cohort and this allowed for personal exchange, and for us to be able to mentor one another. This should be set up in the program, because if this one individual had not organized it, it would have been something I was missing."

Minority report:

- Provide cohort with an organized plan for the year, including time commitment.
- Participants should be aware of and open to challenging feedback and change.
- More information on budgeting and management.
- More information on how to acquire a position (CV, where to look, etc.)
- Maybe a course buyout instead of summer salary to allow for more time to devote to program.

Question #11: Have you applied for a leadership position within or outside of Virginia Tech during the past year?

Five individuals indicated they had applied for a leadership position within the last year; three of these individuals also expressed they were already in a leadership role. One individual stated "no," and another preferred not to answer.

Question #12: Do you expect to apply for a leadership position in the near future?

- Two individuals indicated they are not sure, given that they are in leadership roles currently. Three participants are planning to apply in the future.
- One individual is not sure, but is looking
- One individual preferred not to answer

Question #13: Is there anything else you would like to share about your experiences in the leadership program?

Majority report:

- The luncheons organized by the cohort were particularly beneficial.

- Program was beneficial and a good opportunity and experience.

Quote: "I felt the program was wonderful all around. The leadership program was a way to feel connected and supported at Virginia Tech."

Minority report:
- The running of program seemed disorganized; there was not a sense of whole.

Summary and Suggestions
The Leadership Development Program provided the participants with a confidence that they are able to pursue leadership positions and ultimately that they have the skills to do well in these positions.

Overall, there is a sense that the cohort experience was valuable. Almost all of the participants mentioned the importance of connecting with the other women for support, collaboration, and mentoring. There was also a sense that more cohort related activities should be worked into the Leadership Development Program.

Almost all of the participants reported that the one-on-one sessions were particularly valuable because of the opportunity to reflect on their own skills and abilities and get feedback from a mentor.

Most participants stressed that they really wanted more personal interaction with those in leadership roles. They expressed a desire to have time to ask questions and get an understanding of the specific day-to-day responsibilities of being in a leadership role. The aspect of time was an issue for many participants. A couple mentioned feeling a sense of time pressures on the presenters leaving a feeling of being rushed and others mentioned that they felt like they should have spent more time on the program but they were influenced by their own time limitations.

A few participants really would have liked more information on the climate of leadership at Virginia Tech and skills in negotiating leadership roles in this climate.

Almost all of the participants felt that the program was a positive experience. Of those that noted anything negative about the program, typically these comments were related to personal (and very specific) goals that may not have been addressed by the program. One way to counter-act this might be to assess these goals at the beginning of the program and pair women up with a resource that might be helpful.

2006 Evaluation of the *AdvanceVT* Research Seed Grant Program

Interviews were completed with all ten women who participated in the *AdvanceVT* Research Seed Grant Program during the two year period of 2003-2004 and 2004-2005. Interviews were completed between February 15th and March 22nd of 2006. Participants were asked if they would prefer the interview to be completed over the phone or in person. Each participant signed an informed consent form. At the completion of each interview, the researcher typed up field notes from the interview. Field notes from each interview were sent to each participant for review. The participants were instructed to review the field notes to make sure their comments were accurately represented. They were told they could make changes to the field notes as they saw fit. The participants made very few changes to the field notes. The lack of changes attests to the quality of the data.

The following is a summary of the responses to the interview questions, reported in the form of "majority" and "minority" responses. "Majority" responses indicate that most of the participants noted this experience. "Minority" responses indicate that at least one individual expressed this idea.

Question #1- What were your expected outcomes from your participation in the *AdvanceVT* research seed grant program?

Majority Report

- Participants were interested in funding to work or broaden their research.
- Participants wanted to obtain preliminary data to be able to work on a larger grant proposal.
- Participants were interested in learning more about a specific area of research.

Minority Report

- Participants wanted assistance providing money for graduate students to assist them in working on a research project.
- Participants were interested in getting funding to assist them with travel expenses.

QUOTE: "The seed grant enabled me to further my career."

Question #2- Did the program enhance your research skills and/or abilities?

Majority Report

- Participants felt that the seed grant money allowed them to learn a new skill or tool and to better understand their area of interest.

Minority Report

- Participants felt that the seed grant allowed them to make contacts with others that were interested in their research topic.
- Participants indicated that the seed grant money enabled them to hire a graduate student which indirectly allowed that student to gain more expertise in their area of research.

QUOTE: "The seed grant allowed me to gain new knowledge and make a contact that I would not have had otherwise."

Question #3- How has your participation in the seed grant program influenced your research interests?

Majority Report

- Most participants indicated that they had identified particular research interest prior to applying to the seed grant.

Minority Report

- Participants felt that the seed grant helped to clarify direction or focus.

Question #4- How has your participation in the seed grant program influenced your career path or career goals?

Majority Report

- Participants indicated that they were already on their particular career path.
- The seed grant allowed participants to more easily reach their goals and objectives.

Question #5- Have you submitted a proposal for external grant funding based on the work funded by your seed grant?

Majority Report

- All participants indicated that they have submitted or plan to submit external grant proposals.

Question #6- Do you have any suggestions on how the program could be improved?

Majority Report

- Participants felt that the program was helpful setting the future direction of their work.

Suggestions

- Provide money for second year or reward one recipient for their year of success.
- Meet with other grant participants during the year and/or at end of the year.
- Create a fund for entering doctoral students.
- Monitor the research and provide assistance or feedback.
- Get more practical advice after receiving grant.
- Publicize seed grant progress throughout the year.

QUOTE: "The seed grant program gave me a leg up that I would not have had otherwise."

Question #7- Have you participated in any other *AdvanceVT* activity?

Majority Report

- Participants indicated that they have participated in Advance activities that are not associated with their seed grant.
- Participants indicated that the activities they have participated in have been helpful.

Minority Report

- Time constraints have influenced participation in Advance activities.

Question #8- Is there anything else you would like to share about your experiences in the *AdvanceVT* seed grant program?

Majority Report

- Participants felt that the seed grant was a great opportunity to get started in a new area.

QUOTE: "The seed grant was very useful in jump starting my research."

Summary

One theme that seemed consistent throughout the questions is that the participants felt that receiving the seed grant had benefits that exceeded the financial benefits. Many participants expressed that receiving the seed grant suggested to them that their research was valued and important. This message was also relayed to their graduate students. Many suggested the idea that their hiring female graduate students to further learn their new area of research contributed to the growth of minorities in their area of interest.

All participants indicated that they felt that their expectations of the seed grant program were met. A couple participants explained that the funding was only a small step in their goals and further funding or work is needed. A couple other participants indicated that the seed grant actually working in their proposed area changed their thoughts and direction on their research.